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#12

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<110> Terman, David S

<120> COMPOSITIONS AND METHODS FOR TREATMENT OF NEOPLASTIC DISEASE

<130> 751708

<140> US 09/751,708

<141> 2000-12-28

<150> US 60/173,371

<151> 1999-12-28

<160> 166

<170> PatentIn version 3.1

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<212> DNA

<213> Staphylococcus sp.

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Asn Leu Lys Gln Ile Tyr Tyr Tyr Asn Glu Lys Ala Lys Thr Glu Asn
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Lys Glu Ser His Asp Gln Phe Leu Gln His Thr Ile Leu Phe Lys Gly
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 260 265

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| Pro | Lys | Pro | Asp | Glu | Leu | His | Lys | Ser | Ser | Lys | Phe | Thr | Gly | Leu | Met |
| | | 35 | | | | | 40 | | | | | 45 | | | |

Glu Asn Met Lys Val Leu Tyr Asp Asp Asn His Val Ser Ala Ile Asn
50 55 60

Val Lys Ser Ile Asp Gln Phe Leu Tyr Phe Asp Leu Ile Tyr Ser Ile
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Lys Asp Thr Lys Leu Gly Asn Tyr Asp Asn Val Arg Val Glu Phe Lys
85 90 95

Asn Lys Asp Leu Ala Asp Lys Tyr Lys Asp Lys Tyr Val Asp Val Phe
100 105 110

Gly Ala Asn Tyr Tyr Tyr Gln Cys Tyr Phe Ser Lys Lys Thr Asn Asp
115 120 125

Ile Asn Ser His Gln Thr Asp Lys Arg Lys Thr Cys Met Tyr Gly Gly
130 135 140

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Thr | Glu | His | Asn | Gly | Asn | Gln | Leu | Asp | Lys | Tyr | Arg | Ser | Ile | Thr |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |

Val Arg Val Phe Glu Asp Gly Lys Asn Leu Leu Ser Phe Asp Val Gln
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Thr Asn Lys Lys Lys Val Thr Ala Gln Glu Leu Asp Tyr Leu Thr Arg
180 185 190

His Tyr Leu Val Lys Asn Lys Lys Leu Tyr Glu Phe Asn Asn Ser Pro
195 200 205

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| gga tca aat tac tat gta aac tgc tat ttt tca tcc aaa gat aat gta Gly Ser Asn Tyr Tyr Val Asn Cys Tyr Phe Ser Ser Lys Asp Asn Val 115 120 125 | 501 |
| ggt aaa gtt aca ggt ggc aaa act tgt atg tat gga gga ata aca aaa Gly Lys Val Thr Gly Gly Lys Thr Cys Met Tyr Gly Gly Ile Thr Lys 130 135 140 | 549 |
| cat gaa gga aac cac ttt gat aat ggg aac tta caa aat gta ctt ata His Glu Gly Asn His Phe Asp Asn Gly Asn Leu Gln Asn Val Leu Ile 145 150 155 160 | 597 |
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| tat gat atg atg cct gca cca ggc gat aag ttt gac caa tct aaa tat Tyr Asp Met Met Pro Ala Pro Gly Asp Lys Phe Asp Gln Ser Lys Tyr 225 230 235 240 | 837 |
| tta atg atg tac aac gac aat aaa acg gtt gat tct aaa agt gtg aag Leu Met Met Tyr Asn Asp Asn Lys Thr Val Asp Ser Lys Ser Val Lys 245 250 255 | 885 |
| ata gaa gtc cac ctt aca aca aag aat gga taa tgttaatccg attttgatat Ile Glu Val His Leu Thr Thr Lys Asn Gly 260 265 | 938 |
| aaaaagtgaa agtattagat atatttgaaa ggtaagtact tcggtgcttg ccttttttagg | 998 |
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ctataaaaga atcatttaaa ggtgctcaaa tttattgaaa aaaggtggaa t atg aaa 297
Met Lys
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aaa ttt aac att ctt att gca tta ctc ttt ttt act agt ttg gta ata 345
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Lys Glu Leu His Lys Lys Ser Glu Leu Ser Ser Thr Ala Leu Asn Asn
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| ttt act gac ctt atc aat ttt gaa gat tta tta ata aac ttc aat tca | 585 |
| Phe Thr Asp Leu Ile Asn Phe Glu Asp Leu Leu Ile Asn Phe Asn Ser | |
| 85 90 95 | |
| aaa gaa atg gct caa cat ttc aaa tct aaa aat gta gat gtt tac cct | 633 |
| Lys Glu Met Ala Gln His Phe Lys Ser Lys Asn Val Asp Val Tyr Pro | |
| 100 105 110 | |
| ata aga tat agc att aat tgt tat ggt ggt gaa ata gat agg act gct | 681 |
| Ile Arg Tyr Ser Ile Asn Cys Tyr Gly Gly Glu Ile Asp Arg Thr Ala | |
| 115 120 125 130 | |
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| Cys Thr Tyr Gly Gly Val Thr Pro His Glu Gly Asn Lys Leu Lys Glu | |
| 135 140 145 | |
| cga aaa aaa ata cca atc aat ttg tgg ata aat ggt gta caa aaa gaa | 777 |
| Arg Lys Lys Ile Pro Ile Asn Leu Trp Ile Asn Gly Val Gln Lys Glu | |
| 150 155 160 | |
| gtt tct tta gat aaa gtt caa aca gat aaa aaa aat gtt acc gta caa | 825 |
| Val Ser Leu Asp Lys Val Gln Thr Asp Lys Lys Asn Val Thr Val Gln | |
| 165 170 175 | |
| gaa tta gat gca caa gca agg cgc tat ttg caa aag gat tta aaa ttg | 873 |
| Glu Leu Asp Ala Gln Ala Arg Arg Tyr Leu Gln Lys Asp Leu Lys Leu | |
| 180 185 190 | |
| tat aat aat gat act ctc gga gga aaa ata cag cgc gga aaa ata gag | 921 |
| Tyr Asn Asn Asp Thr Leu Gly Gly Lys Ile Gln Arg Gly Lys Ile Glu | |
| 195 200 205 210 | |
| ttt gat tct tct gat ggg tct aaa gtc tct tat gat tta ttt gat gtt | 969 |
| Phe Asp Ser Ser Asp Gly Ser Lys Val Ser Tyr Asp Leu Phe Asp Val | |
| 215 220 225 | |
| aag ggt gat ttt ccc gaa aaa caa tta cga ata tac agt gat aat aaa | 1017 |
| Lys Gly Asp Phe Pro Glu Lys Gln Leu Arg Ile Tyr Ser Asp Asn Lys | |
| 230 235 240 | |
| aca tta tcc aca gag cac ctt cat att gac atc tat tta tat gaa aag | 1065 |
| Thr Leu Ser Thr Glu His Leu His Ile Asp Ile Tyr Leu Tyr Glu Lys | |
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 35 40 45

Asn Asn Met Lys His Ser Tyr Ala Asp Lys Asn Pro Ile Ile Gly Glu
 50 55 60

Asn Lys Ser Thr Gly Asp Gln Phe Leu Glu Asn Thr Leu Leu Tyr Lys
 65 70 75 80

Lys Phe Phe Thr Asp Leu Ile Asn Phe Glu Asp Leu Leu Ile Asn Phe
 85 90 95

Asn Ser Lys Glu Met Ala Gln His Phe Lys Ser Lys Asn Val Asp Val
 100 105 110

Tyr Pro Ile Arg Tyr Ser Ile Asn Cys Tyr Gly Gly Glu Ile Asp Arg
 115 120 125

Thr Ala Cys Thr Tyr Gly Gly Val Thr Pro His Glu Gly Asn Lys Leu
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Lys Glu Arg Lys Lys Ile Pro Ile Asn Leu Trp Ile Asn Gly Val Gln
 145 150 155 160

Lys Glu Val Ser Leu Asp Lys Val Gln Thr Asp Lys Lys Asn Val Thr
 165 170 175

Val Gln Glu Leu Asp Ala Gln Ala Arg Arg Tyr Leu Gln Lys Asp Leu
 180 185 190

Lys Leu Tyr Asn Asn Asp Thr Leu Gly Gly Lys Ile Gln Arg Gly Lys
 195 200 205

Ile Glu Phe Asp Ser Ser Asp Gly Ser Lys Val Ser Tyr Asp Leu Phe
 210 215 220

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 aca aca agt cca ctt gta aat ggt agc gag aaa agc gaa gaa ata aat 96
 Thr Thr Ser Pro Leu Val Asn Gly Ser Glu Lys Ser Glu Glu Ile Asn
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 Glu Lys Asp Leu Arg Lys Lys Ser Glu Leu Gln Arg Asn Ala Leu Ser
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 Asn Leu Arg Gln Ile Tyr Tyr Tyr Asn Glu Lys Ala Ile Thr Glu Asn
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 aaa gag agt gat gat cag ttt tta gag aat act ttg tta ttt aaa ggt 240
 Lys Glu Ser Asp Asp Gln Phe Leu Glu Asn Thr Leu Leu Phe Lys Gly
 65 70 75 80
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 Phe Phe Thr Gly His Pro Trp Tyr Asn Asp Leu Leu Val Asp Leu Gly
 85 90 95

17

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Asn Leu Arg Gln Ile Tyr Tyr Tyr Asn Glu Lys Ala Ile Thr Glu Asn
50 55 60

Lys Glu Ser Asp Asp Gln Phe Leu Glu Asn Thr Leu Leu Phe Lys Gly
65 70 75 80

Phe Phe Thr Gly His Pro Trp Tyr Asn Asp Leu Leu Val Asp Leu Gly
85 90 95

Ser Lys Asp Ala Thr Asn Lys Tyr Lys Gly Lys Lys Val Asp Leu Tyr
100 105 110

Gly Ala Tyr Tyr Gly Tyr Gln Cys Ala Gly Gly Thr Pro Asn Lys Thr
115 120 125

Ala Cys Met Tyr Gly Gly Val Thr Leu His Asp Asn Asn Arg Leu Thr
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145 150 155 160

Thr Val Pro Ile Asp Lys Val Lys Thr Ser Lys Lys Glu Val Thr Val
165 170 175

Gln Glu Leu Asp Leu Gln Ala Arg His Tyr Leu His Gly Lys Phe Gly
180 185 190

Leu Tyr Asn Ser Asp Ser Phe Gly Gly Lys Val Gln Arg Gly Leu Ile
195 200 205

Val Phe His Ser Ser Glu Gly Ser Thr Val Ser Tyr Asp Leu Phe Asp
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 Ser Pro Leu Leu Leu Ala Thr Thr Ala Thr Asp Phe Thr Pro Val Pro
 15 20 25

tta tca tct aat caa ata atc aaa act gca aaa gca tct aca aac gat 147
 Leu Ser Ser Asn Gln Ile Ile Lys Thr Ala Lys Ala Ser Thr Asn Asp
 30 35 40

aat ata aag gat ttg cta gac tgg tat agt agt ggg tct gac act ttt 195
 Asn Ile Lys Asp Leu Leu Asp Trp Tyr Ser Ser Gly Ser Asp Thr Phe
 45 50 55 60

aca aat agt gaa gtt tta gat aat tcc tta gga tct atg cgt ata aaa 243
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 65 70 75

aac aca gat ggc agc atc agc ttg ata att ttt ccg agt cct tat tat 291
 Asn Thr Asp Gly Ser Ile Ser Leu Ile Ile Phe Pro Ser Pro Tyr Tyr
 80 85 90

agc cct gct ttt aca aaa ggg gaa aaa gtt gac tta aac aca aaa aga 339
 Ser Pro Ala Phe Thr Lys Gly Glu Lys Val Asp Leu Asn Thr Lys Arg
 95 100 105

act aaa aaa agc caa cat act agc gaa gga act tat atc cat ttc caa 387
 Thr Lys Lys Ser Gln His Thr Ser Glu Gly Thr Tyr Ile His Phe Gln
 110 115 120

ata agt ggc gtt aca aat act gaa aaa tta cct act cca ata gaa cta 435
 Ile Ser Gly Val Thr Asn Thr Glu Lys Leu Pro Thr Pro Ile Glu Leu
 125 130 135 140

cct tta aaa gtt aag gtt cat ggt aaa gat agc ccc tta aag tat ggg 483
 Pro Leu Lys Val Lys Val His Gly Lys Asp Ser Pro Leu Lys Tyr Gly
 145 150 155

cca aag ttc gat aaa aaa caa tta gct ata tca act tta gac ttt gaa 531
 Pro Lys Phe Asp Lys Lys Gln Leu Ala Ile Ser Thr Leu Asp Phe Glu
 160 165 170

att cgt cat cag cta act caa ata cat gga tta tat cgt tca agc gat 579
 ile arg his gln leu thr gln ile his gly leu tyr arg ser ser asp
 175 180 185

aaa acg ggt ggt tat tgg aaa ata aca atg aat gac gga tcc aca tat 627
 lys thr gly gly tyr trp lys ile thr met asn asp gly ser thr tyr
 190 195 200

caa agt gat tta tct aaa aag ttt gaa tac aat act gaa aaa cca cct 675
 gln ser asp leu ser lys lys phe glu tyr asn thr glu lys pro pro
 205 210 215 220

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Gln Ile Ile Lys Thr Ala Lys Ala Ser Thr Asn Asp Asn Ile Lys Asp
 35 40 45

Leu Leu Asp Trp Tyr Ser Ser Gly Ser Asp Thr Phe Thr Asn Ser Glu
 50 55 60

Val Leu Asp Asn Ser Leu Gly Ser Met Arg Ile Lys Asn Thr Asp Gly
 65 70 75 80

Ser Ile Ser Leu Ile Ile Phe Pro Ser Pro Tyr Tyr Ser Pro Ala Phe
 85 90 95

Thr Lys Gly Glu Lys Val Asp Leu Asn Thr Lys Arg Thr Lys Lys Ser
 100 105 110

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| tta ata tat aat gtt tca ggg cca aat tat gat aaa tta aaa act gaa Leu Ile Tyr Asn Val Ser Gly Pro Asn Tyr Asp Lys Leu Lys Thr Glu 80 85 90 | 351 |
| ctt aag aac caa gag atg gca act tta ttt aag gat aaa aac gtt gat Leu Lys Asn Gln Glu Met Ala Thr Leu Phe Lys Asp Lys Asn Val Asp 95 100 105 | 399 |
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| gaa agg agt gca tgt ctc tac gga ggg gta aca aat cat gaa ggg aat Glu Arg Ser Ala Cys Leu Tyr Gly Gly Val Thr Asn His Glu Gly Asn 125 130 135 | 495 |
| cat tta gaa att cct aaa aag ata gtc gtt aaa gta tca atc gat ggt His Leu Glu Ile Pro Lys Lys Ile Val Val Lys Val Ser Ile Asp Gly 140 145 150 155 | 543 |
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| tca aga att agc tat aca gtt aga aaa tat ctt aca gat aat aag caa Ser Arg Ile Ser Tyr Thr Val Arg Lys Tyr Leu Thr Asp Asn Lys Gln 175 180 185 | 639 |
| cta tat act aat gga cct tct aaa tat gaa act gga tat ata aag ttc Leu Tyr Thr Asn Gly Pro Ser Lys Tyr Glu Thr Gly Tyr Ile Lys Phe 190 195 200 | 687 |
| ata cct aag aat aaa gaa agt ttt tgg ttt gat ttt ttc cct gaa cca Ile Pro Lys Asn Lys Glu Ser Phe Trp Phe Asp Phe Phe Pro Glu Pro 205 210 215 | 735 |
| gaa ttt act caa tct aaa tat ctt atg ata tat aaa gat aat gaa acg Glu Phe Thr Gln Ser Lys Tyr Leu Met Ile Tyr Lys Asp Asn Glu Thr 220 225 230 235 | 783 |
| ctt gac tca aac aca agc caa att gaa gtc tac cta aca acc aag taa Leu Asp Ser Asn Thr Ser Gln Ile Glu Val Tyr Leu Thr Thr Lys 240 245 250 | 831 |

[illegible]

| | |
|-------|---------|
| <210> | 21 |
| <211> | 25 |
| <212> | DNA |
| <213> | Unknown |

```
<400> 21
gggaattcca tggagagtca accag
```

25

| | |
|-------|---------|
| <210> | 22 |
| <211> | 21 |
| <212> | DNA |
| <213> | Unknown |

<220>
<223> 'Primer

```
<400> 22
gcaagcttaa cttgttaata g
```

21

| | |
|-------|---------|
| <210> | 23 |
| <211> | 22 |
| <212> | DNA |
| <213> | Unknown |

<220>
<223> Primer

22

| | |
|-------|---------|
| <210> | 24 |
| <211> | 22 |
| <212> | DNA |
| <213> | Unknown |

<220>
<223> Primer

22

| | |
|-------|---------|
| <210> | 25 |
| <211> | 50 |
| <212> | DNA |
| <213> | Unknown |

<220>
<223> Primer

50

| | |
|-------|---------|
| <210> | 26 |
| <211> | 42 |
| <212> | DNA |
| <213> | Unknown |

<220>
<223> Primer

42

```
<210> 27
<211> 1612
<212> DNA
<213> Escherichia coli
```

```
<220>
<221> CDS
<222> (200) .. (1159)
<223>
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ttgccttctg agcaatcggg cactggttcg aatccagtac aacgcgccat atttatttac      120
```

| | |
|---|-----|
| caggctcgct tttgcgggcc ttttttatat ctgcgcggg tctgggtctg attacttcag | 180 |
| ccaaaaaggaa cacctgtat atg aag tgt ata tta ttt aaa tgg gta ctg tgc | 232 |
| Met Lys Cys Ile Leu Phe Lys Trp Val Leu Cys | |
| 1 5 10 | |
| ctg tta ctg ggt ttt tct tcg gta tcc tat tcc cgg gag ttt acg ata | 280 |
| Leu Leu Leu Gly Phe Ser Ser Val Ser Tyr Ser Arg Glu Phe Thr Ile | |
| 15 20 25 | |
| gac ttt tcg acc caa caa agt tat gtc tct tcg tta aat agt ata cgg | 328 |
| Asp Phe Ser Thr Gln Gln Ser Tyr Val Ser Ser Leu Asn Ser Ile Arg | |
| 30 35 40 | |
| aca gag ata tcg acc cct ctt gaa cat ata tct cag ggg acc aca tcg | 376 |
| Thr Glu Ile Ser Thr Pro Leu Glu His Ile Ser Gln Gly Thr Thr Ser | |
| 45 50 55 | |
| gtg tct gtt att aac cac acc cca ccg ggc agt tat ttt gct gtg gat | 424 |
| Val Ser Val Ile Asn His Thr Pro Pro Gly Ser Tyr Phe Ala Val Asp | |
| 60 65 70 75 | |
| ata cga ggg ctt gat gtc tat cag gcg cgt ttt gac cat ctt cgt ctg | 472 |
| Ile Arg Gly Leu Asp Val Tyr Gln Ala Arg Phe Asp His Leu Arg Leu | |
| 80 85 90 | |
| att att gag caa aat aat tta tat gtg gcc ggg ttc gtt aat acg gca | 520 |
| Ile Ile Glu Gln Asn Asn Leu Tyr Val Ala Gly Phe Val Asn Thr Ala | |
| 95 100 105 | |
| aca aat act ttc tac cgt ttt tca gat ttt aca cat ata tca gtg ccc | 568 |
| Thr Asn Thr Phe Tyr Arg Phe Ser Asp Phe Thr His Ile Ser Val Pro | |
| 110 115 120 | |
| ggt gtg aca acg gtt tcc atg aca acg gac agc agt tat acc act ctg | 616 |
| Gly Val Thr Thr Val Ser Met Thr Thr Asp Ser Ser Tyr Thr Thr Leu | |
| 125 130 135 | |
| caa cgt gtc gca gcg ctg gaa cgt tcc gga atg caa atc agt cgt cac | 664 |
| Gln Arg Val Ala Ala Leu Glu Arg Ser Gly Met Gln Ile Ser Arg His | |
| 140 145 150 155 | |
| tca ctg gtt tca tca tat ctg gcg tta atg gag ttc agt ggt aat aca | 712 |
| Ser Leu Val Ser Ser Tyr Leu Ala Leu Met Glu Phe Ser Gly Asn Thr | |
| 160 165 170 | |
| atg acc aga gat gca tcc aga gca gtt ctg cgt ttt gtc act gtc aca | 760 |
| Met Thr Arg Asp Ala Ser Arg Ala Val Leu Arg Phe Val Thr Val Thr | |
| 175 180 185 | |
| gca gaa gcc tta cgc ttc agg cag ata cag aga gaa ttt cgt cag gca | 808 |
| Ala Glu Ala Leu Arg Phe Arg Gln Ile Gln Arg Glu Phe Arg Gln Ala | |
| 190 195 200 | |

27

<400> 28

Met Lys Cys Ile Leu Phe Lys Trp Val Leu Cys Leu Leu Leu Gly Phe
1 5 10 15

Ser Ser Val Ser Tyr Ser Arg Glu Phe Thr Ile Asp Phe Ser Thr Gln
20 25 30

Gln Ser Tyr Val Ser Ser Leu Asn Ser Ile Arg Thr Glu Ile Ser Thr
35 40 45

Pro Leu Glu His Ile Ser Gln Gly Thr Thr Ser Val Ser Val Ile Asn
50 55 60

His Thr Pro Pro Gly Ser Tyr Phe Ala Val Asp Ile Arg Gly Leu Asp
65 70 75 80

Val Tyr Gln Ala Arg Phe Asp His Leu Arg Leu Ile Ile Glu Gln Asn
85 90 95

Asn Leu Tyr Val Ala Gly Phe Val Asn Thr Ala Thr Asn Thr Phe Tyr
100 105 110

Arg Phe Ser Asp Phe Thr His Ile Ser Val Pro Gly Val Thr Thr Val
115 120 125

Ser Met Thr Thr Asp Ser Ser Tyr Thr Thr Leu Gln Arg Val Ala Ala
130 135 140

Leu Glu Arg Ser Gly Met Gln Ile Ser Arg His Ser Leu Val Ser Ser
145 150 155 160

Tyr Leu Ala Leu Met Glu Phe Ser Gly Asn Thr Met Thr Arg Asp Ala
165 170 175

Ser Arg Ala Val Leu Arg Phe Val Thr Val Thr Ala Glu Ala Leu Arg
180 185 190

Phe Arg Gln Ile Gln Arg Glu Phe Arg Gln Ala Leu Ser Glu Thr Ala
195 200 205

Pro Val Tyr Thr Met Thr Pro Gly Asp Val Asp Leu Thr Leu Asn Trp
210 215 220

Gly Arg Ile Ser Asn Val Leu Pro Glu Tyr Arg Gly Glu Asp Gly Val
225 230 235 240

Arg Val Gly Arg Ile Ser Phe Asn Asn Ile Ser Ala Ile Leu Gly Thr
245 250 255

Val Ala Val Ile Leu Asn Cys His His Gln Gly Ala Arg Ser Val Arg
260 265 270

Ala Val Asn Glu Glu Ser Gln Pro Glu Cys Gln Ile Thr Gly Asp Arg
275 280 285

Pro Val Ile Lys Ile Asn Asn Thr Leu Trp Glu Ser Asn Thr Ala Ala
290 295 300

Ala Phe Leu Asn Arg Lys Ser Gln Phe Leu Tyr Thr Thr Gly Lys
305 310 315

<210> 29
<211> 4
<212> PRT
<213> Mus musculus

<400> 29

Tyr Gln Thr Ile
1

<210> 30
<211> 31
<212> DNA
<213> Unknown

<220>
<223> Primer

<400> 30
gaattcaagc ttatgatcac tatgcttcaa g

31

<210> 31
<211> 29
<212> DNA
<213> Unknown

<220>
<223> Primer

<400> 31
gaattcctgc agtcagacat tattctaac

29

<210> 32
<211> 3938
<212> DNA
<213> Yersinia pseudotuberculosis

<220>
<221> CDS
<222> (474)..(3434)
<223>

<400> 32
tcatcaaggc aaccatcagg attaatgcgg atattgcgga gtaacacttc agactgaaag 60
tagaaataaa aaccgcagca gacaactgac aacatcaaata gaagggggct tattctaatt 120
gatattatatt atagataat agttcatttt gtatTTTTgt tttttttgat attctcacct 180
gcttagttac aataaatcaa ttctatcgct gtatggtata gactgtttta ttatatattt 240
tgaatatttt taatctgccc agtctgggtt tttaaaaaag tgctatcctc ttaatgtctt 300
tactaaatta gaaaacaagt ttcactttca actattgcat ctttaattaa tgggtcaagg 360
gatttcaaata gctcgtttgt ggccagttat acctcaaata actcaagttg ttgagcacag 420
ccaacgcaca tgcagtttga cgtatgacag gtatgcttta tttcatttaa att atg 476
Met
1
atg gtt ttc cag cca atc agt gag ttt ctc ttg ata agg aat gcg gga 524
Met Val Phe Gln Pro Ile Ser Glu Phe Leu Leu Ile Arg Asn Ala Gly
5 10 15
atg tct atg tat ttt aat aaa ata att tca ttt aat att att tca cga 572
Met Ser Met Tyr Phe Asn Lys Ile Ile Ser Phe Asn Ile Ile Ser Arg
20 25 30
ata gtt att tgt atc ttt ttg ata tgt gga atg ttc atg gct ggg gct 620
Ile Val Ile Cys Ile Phe Leu Ile Cys Gly Met Phe Met Ala Gly Ala
35 40 45
tca gaa aaa tat gat gct aac gca ccg caa cag gtc cag cct tat tct 668
Ser Glu Lys Tyr Asp Ala Asn Ala Pro Gln Gln Val Gln Pro Tyr Ser
50 55 60 65
gtc tct tca tct gca ttt gaa aat ctc cat cct aat aat gaa atg gag 716
Val Ser Ser Ser Ala Phe Glu Asn Leu His Pro Asn Asn Glu Met Glu
70 75 80

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| gat | aat | ctg | caa | cgc | aac | cct | tat | gcc | gtg | act | gcc | ggg | atc | aat | tac | 1436 |
| Asp | Asn | Leu | Gln | Arg | Asn | Pro | Tyr | Ala | Val | Thr | Ala | Gly | Ile | Asn | Tyr | |
| | | | 310 | | | | | | 315 | | | | | 320 | | |
| acc | ccc | gtg | cct | cta | ctc | act | gtc | ggg | gta | gat | cag | cgt | atg | ggg | aaa | 1484 |
| Thr | Pro | Val | Pro | Leu | Leu | Thr | Val | Gly | Val | Asp | Gln | Arg | Met | Gly | Lys | |
| | | | 325 | | | | | 330 | | | | | 335 | | | |
| agc | agt | aag | cat | gaa | aca | cag | tgg | aac | ctc | caa | atg | aac | tat | cgc | ctg | 1532 |
| Ser | Ser | Lys | His | Glu | Thr | Gln | Trp | Asn | Leu | Gln | Met | Asn | Tyr | Arg | Leu | |
| | | 340 | | | | | 345 | | | | | 350 | | | | |
| ggc | gag | agt | ttt | cag | tcg | caa | ctt | agc | cct | tca | gcg | gtg | gca | gga | aca | 1580 |
| Gly | Glu | Ser | Phe | Gln | Ser | Gln | Leu | Ser | Pro | Ser | Ala | Val | Ala | Gly | Thr | |
| | 355 | | | | | 360 | | | | | 365 | | | | | |
| cgt | cta | ctg | gcg | gag | agc | cgc | tat | aac | ctt | gtc | gat | cgt | aac | aat | aat | 1628 |
| Arg | Leu | Leu | Ala | Glu | Ser | Arg | Tyr | Asn | Leu | Val | Asp | Arg | Asn | Asn | Asn | |
| 370 | | | | | 375 | | | | | 380 | | | | | 385 | |
| atc | gtg | ttg | gag | tat | cag | aaa | cag | cag | gtg | gtt | aaa | ctg | aca | tta | tcg | 1676 |
| Ile | Val | Leu | Glu | Tyr | Gln | Lys | Gln | Gln | Val | Val | Lys | Leu | Thr | Leu | Ser | |
| | | | 390 | | | | | | 395 | | | | | 400 | | |
| cca | gca | act | atc | tcc | ggc | ctg | ccg | ggt | cag | gtt | tat | cag | gtg | aac | gca | 1724 |
| Pro | Ala | Thr | Ile | Ser | Gly | Leu | Pro | Gly | Gln | Val | Tyr | Gln | Val | Asn | Ala | |
| | | | 405 | | | | | 410 | | | | | 415 | | | |
| caa | gta | caa | ggg | gca | tct | gct | gta | agg | gaa | att | gtc | tgg | agt | gat | gcc | 1772 |
| Gln | Val | Gln | Gly | Ala | Ser | Ala | Val | Arg | Glu | Ile | Val | Trp | Ser | Asp | Ala | |
| | | 420 | | | | 425 | | | | | | 430 | | | | |
| gaa | ctg | att | gcc | gct | ggc | ggc | aca | tta | aca | cca | ctg | agt | acc | aca | caa | 1820 |
| Glu | Leu | Ile | Ala | Ala | Gly | Gly | Thr | Leu | Thr | Pro | Leu | Ser | Thr | Thr | Gln | |
| | 435 | | | | | 440 | | | | | 445 | | | | | |
| ttc | aac | ttg | gtt | tta | ccg | cct | tat | aaa | cgc | aca | gca | caa | gtg | agt | cgg | 1868 |
| Phe | Asn | Leu | Val | Leu | Pro | Pro | Tyr | Lys | Arg | Thr | Ala | Gln | Val | Ser | Arg | |
| 450 | | | | | 455 | | | | | 460 | | | | | 465 | |
| gta | acg | gac | gac | ctg | aca | gcc | aac | ttt | tat | tcg | ctt | agt | gcg | ctc | gcg | 1916 |
| Val | Thr | Asp | Asp | Leu | Thr | Ala | Asn | Phe | Tyr | Ser | Leu | Ser | Ala | Leu | Ala | |
| | | | | 470 | | | | | 475 | | | | | 480 | | |
| gtt | gat | cac | caa | gga | aac | cga | tct | aac | tca | ttc | aca | ttg | agc | gtc | acc | 1964 |
| Val | Asp | His | Gln | Gly | Asn | Arg | Ser | Asn | Ser | Phe | Thr | Leu | Ser | Val | Thr | |
| | | | 485 | | | | | 490 | | | | | 495 | | | |
| gtt | cag | cag | cct | cag | ttg | aca | tta | acg | gcg | gcc | gtc | att | ggg | gat | ggc | 2012 |
| Val | Gln | Gln | Pro | Gln | Leu | Thr | Leu | Thr | Ala | Ala | Val | Ile | Gly | Asp | Gly | |
| | | | 500 | | | | 505 | | | | | 510 | | | | |

С

| | |
|---|------|
| acc gag cag cca gat agc tat acc gcg acg gtg gtt ggg aat agt gtc | 2780 |
| Thr Glu Gln Pro Asp Ser Tyr Thr Ala Thr Val Val Gly Asn Ser Val | |
| 755 760 765 | |
| ggt gat gtc aca atc acg ccg cag gtt gat acc ctg ata ctg agt aca | 2828 |
| Gly Asp Val Thr Ile Thr Pro Gln Val Asp Thr Leu Ile Leu Ser Thr | |
| 770 775 780 785 | |
| ttg cag aaa aaa ata tcc cta ttc ccg gta cct acg ctg acc ggt att | 2876 |
| Leu Gln Lys Lys Ile Ser Leu Phe Pro Val Pro Thr Leu Thr Gly Ile | |
| 790 795 800 | |
| ctg gtt aac ggg caa aat ttc gct acg gat aaa ggg ttc ccg aaa acg | 2924 |
| Leu Val Asn Gly Gln Asn Phe Ala Thr Asp Lys Gly Phe Pro Lys Thr | |
| 805 810 815 | |
| atc ttt aaa aac gcc aca ttc cag tta cag atg gat aac gat gtt gct | 2972 |
| Ile Phe Lys Asn Ala Thr Phe Gln Leu Gln Met Asp Asn Asp Val Ala | |
| 820 825 830 | |
| aat aat act cag tat gag tgg tgg tca ttc aca ccc aat gta tgg | 3020 |
| Asn Asn Thr Gln Tyr Glu Trp Ser Ser Ser Phe Thr Pro Asn Val Ser | |
| 835 840 845 | |
| gtt aac gat cag ggt cag gtg acg att acc tac caa acc tat agc gaa | 3068 |
| Val Asn Asp Gln Gly Gln Val Thr Ile Thr Tyr Gln Thr Tyr Ser Glu | |
| 850 855 860 865 | |
| gtg gct gtg acg gcg aaa agt aaa aaa ttc cca agt tat tgg gtg agt | 3116 |
| Val Ala Val Thr Ala Lys Ser Lys Lys Phe Pro Ser Tyr Ser Val Ser | |
| 870 875 880 | |
| tat cgg ttc tac cca aat cgg tgg ata tac gat ggc ggc aga tgg ctg | 3164 |
| Tyr Arg Phe Tyr Pro Asn Arg Trp Ile Tyr Asp Gly Gly Arg Ser Leu | |
| 885 890 895 | |
| gta tcc agt ctc gag gcc agc aga caa tgc caa ggt tca gat atg tct | 3212 |
| Val Ser Ser Leu Glu Ala Ser Arg Gln Cys Gln Gly Ser Asp Met Ser | |
| 900 905 910 | |
| gcg gtt ctt gaa tcc tca cgt gca acc aac gga acg cgt gcg cct gac | 3260 |
| Ala Val Leu Glu Ser Ser Arg Ala Thr Asn Gly Thr Arg Ala Pro Asp | |
| 915 920 925 | |
| ggg aca ttg tgg ggc gag tgg ggg agc ttg acc gcg tat agt tct gat | 3308 |
| Gly Thr Leu Trp Gly Glu Trp Gly Ser Leu Thr Ala Tyr Ser Ser Asp | |
| 930 935 940 945 | |
| tgg caa tct ggt gaa tat tgg gtc aaa aag acc agc acg gat ttt gaa | 3356 |
| Trp Gln Ser Gly Glu Tyr Trp Val Lys Lys Thr Ser Thr Asp Phe Glu | |
| 950 955 960 | |
| acc atg aat atg gac aca ggc gca ctg caa cca ggg cct gca tac ttg | 3404 |
| Thr Met Asn Met Asp Thr Gly Ala Leu Gln Pro Gly Pro Ala Tyr Leu | |
| 965 970 975 | |

gcg ttc ccg ctc tgt gcg ctg tca ata taa ccagataaca gatagcaata 3454
 Ala Phe Pro Leu Cys Ala Leu Ser Ile
 980 985

agaacagttt aatgagctga ttatttgggg cgccaatggg agtccggcaa tcctagactc 3514
 gcccataag tagcaaactg ccagaagaac aacgccgctc aggttaattg agcggcgctg 3574
 tttttttaaaggaggattgtcg cgattaaatg ccgatcttac ggcccaggat attggcacct 3634
 ttagcctgac catcagggcc atagagcgat tggccgtggc gggatttcag gactgccaat 3694
 gcttgattat tatgttcaat atgttggtgt aacagtaacc cattgtgcag gttgctgtaa 3754
 cgcaggcgct cagtgaattg caaaagacgc tgccaacggt cagctaaagc ctgcatgtgg 3814
 ggataaggcg cttgaatatt cgcggtggtc tcggtgggta tccgggtctg atccaaatag 3874
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 atcc 3938

<210> 33
 <211> 986
 <212> PRT
 <213> Yersinia pseudotuberculosis
 <400> 33

Met Met Val Phe Gln Pro Ile Ser Glu Phe Leu Leu Ile Arg Asn Ala
 1 5 10 15

Gly Met Ser Met Tyr Phe Asn Lys Ile Ile Ser Phe Asn Ile Ile Ser
 20 25 30

Arg Ile Val Ile Cys Ile Phe Leu Ile Cys Gly Met Phe Met Ala Gly
 35 40 45

Ala Ser Glu Lys Tyr Asp Ala Asn Ala Pro Gln Gln Val Gln Pro Tyr
 50 55 60

Ser Val Ser Ser Ser Ala Phe Glu Asn Leu His Pro Asn Asn Glu Met
 65 70 75 80

Glu Ser Ser Ile Asn Pro Phe Ser Ala Ser Asp Thr Glu Arg Asn Ala
 85 90 95

Ala Ile Ile Asp Arg Ala Asn Lys Glu Gln Glu Thr Glu Ala Val Asn
 100 105 110

Lys Met Ile Ser Thr Gly Ala Arg Leu Ala Ala Ser Gly Arg Ala Ser
 115 120 125

Asp Val Ala His Ser Met Val Gly Asp Ala Val Asn Gln Glu Ile Lys
 130 135 140

Gln Trp Leu Asn Arg Phe Gly Thr Ala Gln Val Asn Leu Asn Phe Asp
 145 150 155 160

Lys Asn Phe Ser Leu Lys Glu Ser Ser Leu Asp Trp Leu Ala Pro Trp
 165 170 175

Tyr Asp Ser Ala Ser Phe Leu Phe Phe Ser Gln Leu Gly Ile Arg Asn
 180 185 190

Lys Asp Ser Arg Asn Thr Leu Asn Leu Gly Val Gly Ile Arg Thr Leu
 195 200 205

Glu Asn Gly Trp Leu Tyr Gly Leu Asn Thr Phe Tyr Asp Asn Asp Leu
 210 215 220

Thr Gly His Asn His Arg Ile Gly Leu Gly Ala Glu Ala Trp Thr Asp
 225 230 235 240

Tyr Leu Gln Leu Ala Ala Asn Gly Tyr Phe Arg Leu Asn Gly Trp His
 245 250 255

Ser Ser Arg Asp Phe Ser Asp Tyr Lys Glu Arg Pro Ala Thr Gly Gly
 260 265 270

Asp Leu Arg Ala Asn Ala Tyr Leu Pro Ala Leu Pro Gln Leu Gly Gly
 275 280 285

Lys Leu Met Tyr Glu Gln Tyr Thr Gly Glu Arg Val Ala Leu Phe Gly
 290 295 300

Lys Asp Asn Leu Gln Arg Asn Pro Tyr Ala Val Thr Ala Gly Ile Asn
 305 310 315 320

[illegible]

Tyr Thr Pro Val Pro Leu Leu Thr Val Gly Val Asp Gln Arg Met Gly
325 330 335

Lys Ser Ser Lys His Glu Thr Gln Trp Asn Leu Gln Met Asn Tyr Arg
340 345 350

Leu Gly Glu Ser Phe Gln Ser Gln Leu Ser Pro Ser Ala Val Ala Gly
355 360 365

Thr Arg Leu Leu Ala Glu Ser Arg Tyr Asn Leu Val Asp Arg Asn Asn
370 375 380

Asn Ile Val Leu Glu Tyr Gln Lys Gln Gln Val Val Lys Leu Thr Leu
385 390 395 400

Ser Pro Ala Thr Ile Ser Gly Leu Pro Gly Gln Val Tyr Gln Val Asn
405 410 415

Ala Gln Val Gln Gly Ala Ser Ala Val Arg Glu Ile Val Trp Ser Asp
420 425 430

Ala Glu Leu Ile Ala Ala Gly Gly Thr Leu Thr Pro Leu Ser Thr Thr
435 440 445

Gln Phe Asn Leu Val Leu Pro Pro Tyr Lys Arg Thr Ala Gln Val Ser
450 455 460

Arg Val Thr Asp Asp Leu Thr Ala Asn Phe Tyr Ser Leu Ser Ala Leu
465 470 475 480

Ala Val Asp His Gln Gly Asn Arg Ser Asn Ser Phe Thr Leu Ser Val
485 490 495

Thr Val Gln Gln Pro Gln Leu Thr Leu Thr Ala Ala Val Ile Gly Asp
500 505 510

Gly Ala Pro Ala Asn Gly Lys Thr Ala Ile Thr Val Glu Phe Thr Val
515 520 525

Ala Asp Phe Glu Gly Lys Pro Leu Ala Gly Gln Glu Val Val Ile Thr
530 535 540

Val Gly Asp Val Thr Ile Thr Pro Gln Val Asp Thr Leu Ile Leu Ser
770 775 780

Thr Leu Gln Lys Lys Ile Ser Leu Phe Pro Val Pro Thr Leu Thr Gly
785 790 795 800

Ile Leu Val Asn Gly Gln Asn Phe Ala Thr Asp Lys Gly Phe Pro Lys
805 810 815

Thr Ile Phe Lys Asn Ala Thr Phe Gln Leu Gln Met Asp Asn Asp Val
820 825 830

Ala Asn Asn Thr Gln Tyr Glu Trp Ser Ser Ser Phe Thr Pro Asn Val
835 840 845

Ser Val Asn Asp Gln Gly Gln Val Thr Ile Thr Tyr Gln Thr Tyr Ser
850 855 860

Glu Val Ala Val Thr Ala Lys Ser Lys Lys Phe Pro Ser Tyr Ser Val
865 870 875 880

Ser Tyr Arg Phe Tyr Pro Asn Arg Trp Ile Tyr Asp Gly Gly Arg Ser
885 890 895

Leu Val Ser Ser Leu Glu Ala Ser Arg Gln Cys Gln Gly Ser Asp Met
900 905 910

Ser Ala Val Leu Glu Ser Ser Arg Ala Thr Asn Gly Thr Arg Ala Pro
915 920 925

Asp Gly Thr Leu Trp Gly Glu Trp Gly Ser Leu Thr Ala Tyr Ser Ser
930 935 940

Asp Trp Gln Ser Gly Glu Tyr Trp Val Lys Lys Thr Ser Thr Asp Phe
945 950 955 960

Glu Thr Met Asn Met Asp Thr Gly Ala Leu Gln Pro Gly Pro Ala Tyr
965 970 975

Leu Ala Phe Pro Leu Cys Ala Leu Ser Ile
980 985

[Faint, illegible markings]

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<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa is a variable amino acid
```

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<220>
<221>  MISC_FEATURE
<222>  (5)..(5)
<223>  Xaa is a variable amino acid
```

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<220>
<221> MISC_FEATURE
<222> (9)..(9)
<223> Xaa is a variable amino acid
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Leu Xaa Gly Gly Xaa Gly Asn Asp Xaa
1 5

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<220>
<221> CDS
<222> (143) .. (667)
<223>
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[illegible]

gcc aaa ggc ttc agc ccg cgc atc tcc gca ggc tac cgc atc aac gac 316
 Ala Lys Gly Phe Ser Pro Arg Ile Ser Ala Gly Tyr Arg Ile Asn Asp
 45 50 55

ctc cgc ttc gcc gtc gat tac acg cgc tac aaa aac tat aaa gcc cca 364
 Leu Arg Phe Ala Val Asp Tyr Thr Arg Tyr Lys Asn Tyr Lys Ala Pro
 60 65 70

tcc acc gat ttc aaa ctt tac agc atc ggc gcg tcc gcc att tac gac 412
 Ser Thr Asp Phe Lys Leu Tyr Ser Ile Gly Ala Ser Ala Ile Tyr Asp
 75 80 85 90

ttc gac acc caa tcg ccc gtc aaa ccg tat ctc ggc gcg cgc ttg agc 460
 Phe Asp Thr Gln Ser Pro Val Lys Pro Tyr Leu Gly Ala Arg Leu Ser
 95 100 105

ctc aac cgc gcc tcc gtc gac ttg ggc ggc agc gac agc ttc agc caa 508
 Leu Asn Arg Ala Ser Val Asp Leu Gly Gly Ser Asp Ser Phe Ser Gln
 110 115 120

acc tcc atc ggc ctc ggc gta ttg acg ggc gta agc tat gcc gtt acc 556
 Thr Ser Ile Gly Leu Gly Val Leu Thr Gly Val Ser Tyr Ala Val Thr
 125 130 135

ccg aat gtc gat ttg gat gcc ggc tac cgc tac aac tac atc gcc aaa 604
 Pro Asn Val Asp Leu Asp Ala Gly Tyr Arg Tyr Asn Tyr Ile Gly Lys
 140 145 150

gtc aac act gtc aaa aac gtc cgt tcc ggc gaa ctg tcc gtc ggc gtg 652
 Val Asn Thr Val Lys Asn Val Arg Ser Gly Glu Leu Ser Val Gly Val
 155 160 165 170

cgc gtc aaa ttc tga tatgcgcctt attctgcaaa ccgccgagcc ttccgcggtt 707
 Arg Val Lys Phe

ttgttttctg ccaccgcaac tacacaagcc ggcggttttg tacgataatc ccgaatgctg 767

cggtttctgc cgccctatatt tttgaggaat ccgaaatgtc caaaaccatc atccacaccg 827

aca 830

<210> 36
 <211> 174
 <212> PRT
 <213> Neisseria meningitidis

<400> 36

Met Lys Lys Ala Leu Ala Thr Leu Ile Ala Leu Ala Leu Pro Ala Ala
 1 5 10 15

Ala Leu Ala Glu Gly Ala Ser Gly Phe Tyr Val Gln Ala Asp Ala Ala
20 25 30

His Ala Lys Ala Ser Ser Ser Leu Gly Ser Ala Lys Gly Phe Ser Pro
35 40 45

Arg Ile Ser Ala Gly Tyr Arg Ile Asn Asp Leu Arg Phe Ala Val Asp
50 55 60

Tyr Thr Arg Tyr Lys Asn Tyr Lys Ala Pro Ser Thr Asp Phe Lys Leu
65 70 75 80

Tyr Ser Ile Gly Ala Ser Ala Ile Tyr Asp Phe Asp Thr Gln Ser Pro
85 90 95

Val Lys Pro Tyr Leu Gly Ala Arg Leu Ser Leu Asn Arg Ala Ser Val
100 105 110

Asp Leu Gly Gly Ser Asp Ser Phe Ser Gln Thr Ser Ile Gly Leu Gly
115 120 125

Val Leu Thr Gly Val Ser Tyr Ala Val Thr Pro Asn Val Asp Leu Asp
130 135 140

Ala Gly Tyr Arg Tyr Asn Tyr Ile Gly Lys Val Asn Thr Val Lys Asn
145 150 155 160

Val Arg Ser Gly Glu Leu Ser Val Gly Val Arg Val Lys Phe
165 170

<210> 37 <211> 352 <212> PRT <213> Homo sapiens <400> 37

Met Glu Gly Ile Ser Ile Tyr Thr Ser Asp Asn Tyr Thr Glu Glu Met
1 5 10 15

Gly Ser Gly Asp Tyr Asp Ser Met Lys Glu Pro Cys Phe Arg Glu Glu
20 25 30

Asn Ala Asn Phe Asn Lys Ile Phe Leu Pro Thr Ile Tyr Ser Ile Ile
35 40 45

Phe Leu Thr Gly Ile Val Gly Asn Gly Leu Val Ile Leu Val Met Gly
 50 55 60

Tyr Gln Lys Lys Leu Arg Ser Met Thr Asp Lys Tyr Arg Leu His Leu
 65 70 75 80

Ser Val Ala Asp Leu Leu Phe Val Ile Thr Leu Pro Phe Trp Ala Val
 85 90 95

Asp Ala Val Ala Asn Trp Tyr Phe Gly Asn Phe Leu Cys Lys Ala Val
 100 105 110

His Val Ile Tyr Thr Val Asn Leu Tyr Ser Ser Val Leu Ile Leu Ala
 115 120 125

Phe Ile Ser Leu Asp Arg Tyr Leu Ala Ile Val His Ala Thr Asn Ser
 130 135 140

Gln Arg Pro Arg Lys Leu Leu Ala Glu Lys Val Val Tyr Val Gly Val
 145 150 155 160

Trp Ile Pro Ala Leu Leu Leu Thr Ile Pro Asp Phe Ile Phe Ala Asn
 165 170 175

Val Ser Glu Ala Asp Asp Arg Tyr Ile Cys Asp Arg Phe Tyr Pro Asn
 180 185 190

Asp Leu Trp Val Val Val Phe Gln Phe Gln His Ile Met Val Gly Leu
 195 200 205

Ile Leu Pro Gly Ile Val Ile Leu Ser Cys Tyr Cys Ile Ile Ile Ser
 210 215 220

Lys Leu Ser His Ser Lys Gly His Gln Lys Arg Lys Ala Leu Lys Thr
 225 230 235 240

Thr Ile Ile Pro Ile Leu Ala Phe Phe Ala Cys Trp Leu Pro Tyr Tyr
 245 250 255

Ile Gly Ile Ser Ile Asp Ser Phe Ile Leu Leu Glu Ile Ile Lys Gln
 260 265 270

Gly Cys Glu Phe Glu Asn Thr Val His Lys Trp Ile Ser Ile Thr Glu
 275 280 285

Ala Leu Ala Phe Phe His Cys Cys Leu Asn Pro Ile Leu Tyr Ala Phe
 290 295 300

Leu Gly Ala Lys Phe Lys Thr Ser Ala Gln His Ala Leu Thr Ser Val
 305 310 315 320

Ser Arg Gly Ser Ser Leu Lys Ile Leu Ser Lys Gly Lys Arg Gly Gly
 325 330 335

His Ser Ser Val Ser Thr Glu Ser Glu Ser Ser Ser Phe His Ser Ser
 340 345 350

<210> 38
 <211> 645
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (10)..(639)
 <223>

<400> 38
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 Met Leu Arg Ala Gly Glu Val His Thr Gly Thr Thr Ile Met
 1 5 10

gca gtg gag ttt gac ggg ggc gtt gtg atg ggt tct gat tcc cga gtg 99
 Ala Val Glu Phe Asp Gly Gly Val Val Met Gly Ser Asp Ser Arg Val
 15 20 25 30

tct gca ggc gag gcg gtg gtg aac cga gtg ttt gac aag ctg tcc ccg 147
 Ser Ala Gly Glu Ala Val Val Asn Arg Val Phe Asp Lys Leu Ser Pro
 35 40 45

ctg cac gag cgc atc tac tgt gca ctc tct ggt tca gct gct gat gcc 195
 Leu His Glu Arg Ile Tyr Cys Ala Leu Ser Gly Ser Ala Ala Asp Ala
 50 55 60

caa gcc gtg gcc gac atg gcc gcc tac cag ctg gag ctc cat ggg ata 243
 Gln Ala Val Ala Asp Met Ala Ala Tyr Gln Leu Glu Leu His Gly Ile
 65 70 75

gaa ctg gag gaa cct cca ctt gtt ttg gct gct gca aat gtg gtg aga 291
 Glu Leu Glu Glu Pro Pro Leu Val Leu Ala Ala Ala Asn Val Val Arg
 80 85 90

aat atc agc tat aaa tat cga gag gac ttg tct gca cat ctc atg gta 339
 Asn Ile Ser Tyr Lys Tyr Arg Glu Asp Leu Ser Ala His Leu Met Val
 95 100 105 110
 gct ggc tgg gac caa cgt gaa gga ggt cag gta tat gga acc ctg gga 387
 Ala Gly Trp Asp Gln Arg Glu Gly Gly Gln Val Tyr Gly Thr Leu Gly
 115 120 125
 gga atg ctg act cga cag cct ttt gcc att ggt ggc tcc ggc agc acc 435
 Gly Met Leu Thr Arg Gln Pro Phe Ala Ile Gly Gly Ser Gly Ser Thr
 130 135 140
 ttt atc tat ggt tat gtg gat gca gca tat aag cca ggc atg tct ccc 483
 Phe Ile Tyr Gly Tyr Val Asp Ala Ala Tyr Lys Pro Gly Met Ser Pro
 145 150 155
 gag gag tgc agg cgc ttc acc aca gac gct att gct ctg gcc atg agc 531
 Glu Glu Cys Arg Arg Phe Thr Thr Asp Ala Ile Ala Leu Ala Met Ser
 160 165 170
 cgg gat ggc tca agc ggg ggt gtc atc tac ctg gtc act att aca gct 579
 Arg Asp Gly Ser Ser Gly Gly Val Ile Tyr Leu Val Thr Ile Thr Ala
 175 180 185 190
 gcc ggt gtg gac cat cga gtc atc ttg ggc aat gaa ctg cca aaa ttc 627
 Ala Gly Val Asp His Arg Val Ile Leu Gly Asn Glu Leu Pro Lys Phe
 195 200 205
 tat gat gag tga accttc 645
 Tyr Asp Glu

<210> 39
 <211> 209
 <212> PRT
 <213> Homo sapiens

<400> 39

Met Leu Arg Ala Gly Glu Val His Thr Gly Thr Thr Ile Met Ala Val
 1 5 10 15
 Glu Phe Asp Gly Gly Val Val Met Gly Ser Asp Ser Arg Val Ser Ala
 20 25 30
 Gly Glu Ala Val Val Asn Arg Val Phe Asp Lys Leu Ser Pro Leu His
 35 40 45
 Glu Arg Ile Tyr Cys Ala Leu Ser Gly Ser Ala Ala Asp Ala Gln Ala
 50 55 60

Val Ala Asp Met Ala Ala Tyr Gln Leu Glu Leu His Gly Ile Glu Leu
65 70 75 80

Glu Glu Pro Pro Leu Val Leu Ala Ala Ala Asn Val Val Arg Asn Ile
85 90 95

Ser Tyr Lys Tyr Arg Glu Asp Leu Ser Ala His Leu Met Val Ala Gly
100 105 110

Trp Asp Gln Arg Glu Gly Gly Gln Val Tyr Gly Thr Leu Gly Gly Met
115 120 125

Leu Thr Arg Gln Pro Phe Ala Ile Gly Gly Ser Gly Ser Thr Phe Ile
130 135 140

Tyr Gly Tyr Val Asp Ala Ala Tyr Lys Pro Gly Met Ser Pro Glu Glu
145 150 155 160

Cys Arg Arg Phe Thr Thr Asp Ala Ile Ala Leu Ala Met Ser Arg Asp
165 170 175

Gly Ser Ser Gly Gly Val Ile Tyr Leu Val Thr Ile Thr Ala Ala Gly
180 185 190

Val Asp His Arg Val Ile Leu Gly Asn Glu Leu Pro Lys Phe Tyr Asp
195 200 205

Glu

<210> 40
<211> 2247
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(2247)
<223>

<400> 40
atg gct agc tct agg tgt ccc gct ccc cgc ggg tgc cgc tgc ctc ccc
Met Ala Ser Ser Arg Cys Pro Ala Pro Arg Gly Cys Arg Cys Leu Pro
1 5 10 15

48

| | |
|---|-----|
| gga gct tct ctc gca tgg ctg ggg aca gta ctg cta ctt ctc gcc gac | 96 |
| Gly Ala Ser Leu Ala Trp Leu Gly Thr Val Leu Leu Leu Leu Ala Asp | |
| 20 25 30 | |
| tgg gtg ctg ctc cgg acc gcg ctg ccc cgc ata ttc tcc ctg ctg gtg | 144 |
| Trp Val Leu Leu Arg Thr Ala Leu Pro Arg Ile Phe Ser Leu Leu Val | |
| 35 40 45 | |
| ccc acc gcg ctg cca ctg ctc cgg gtc tgg gcg gtg ggc ctg agc cgc | 192 |
| Pro Thr Ala Leu Pro Leu Leu Arg Val Trp Ala Val Gly Leu Ser Arg | |
| 50 55 60 | |
| tgg gcc gtg ctc tgg ctg ggg gcc tgc ggg gtc ctc agg gca acg gtt | 240 |
| Trp Ala Val Leu Trp Leu Gly Ala Cys Gly Val Leu Arg Ala Thr Val | |
| 65 70 75 80 | |
| ggc tcc aag agc gaa aac gca ggt gcc cag ggc tgg ctg gct gct ttg | 288 |
| Gly Ser Lys Ser Glu Asn Ala Gly Ala Gln Gly Trp Leu Ala Ala Leu | |
| 85 90 95 | |
| aag cca tta gct gcg gca ctg ggc ttg gcc ctg ccg gga ctt gcc ttg | 336 |
| Lys Pro Leu Ala Ala Ala Leu Gly Leu Ala Leu Pro Gly Leu Ala Leu | |
| 100 105 110 | |
| ttc cga gag ctg atc tca tgg gga gcc ccc ggg tcc gcg gat agc acc | 384 |
| Phe Arg Glu Leu Ile Ser Trp Gly Ala Pro Gly Ser Ala Asp Ser Thr | |
| 115 120 125 | |
| agg cta ctg cac tgg gga agt cac cct acc gcc ttc gtt gtc agt tat | 432 |
| Arg Leu Leu His Trp Gly Ser His Pro Thr Ala Phe Val Val Ser Tyr | |
| 130 135 140 | |
| gca gcg gca ctg ccc gca gca gcc ctg tgg cac aaa ctc ggg agc ctc | 480 |
| Ala Ala Ala Leu Pro Ala Ala Ala Leu Trp His Lys Leu Gly Ser Leu | |
| 145 150 155 160 | |
| tgg gtg ccc ggc ggt cag ggc ggc tct gga aac cct gtg cgt cgg ctt | 528 |
| Trp Val Pro Gly Gly Gln Gly Gly Ser Gly Asn Pro Val Arg Arg Leu | |
| 165 170 175 | |
| cta ggc tgc ctg ggc tcg gag acg cgc cgc ctc tcg ctg ttc ctg gtc | 576 |
| Leu Gly Cys Leu Gly Ser Glu Thr Arg Arg Leu Ser Leu Phe Leu Val | |
| 180 185 190 | |
| ctg gtg gtc ctc tcc tct ctt ggg gag atg gcc att cca ttc ttt acg | 624 |
| Leu Val Val Leu Ser Ser Leu Gly Glu Met Ala Ile Pro Phe Phe Thr | |
| 195 200 205 | |
| ggc cgc ctc act gac tgg att cta caa gat ggc tca gcc gat acc ttc | 672 |
| Gly Arg Leu Thr Asp Trp Ile Leu Gln Asp Gly Ser Ala Asp Thr Phe | |
| 210 215 220 | |
| act cga aac tta act ctc atg tcc att ctc acc ata gcc agt gca gtg | 720 |
| Thr Arg Asn Leu Thr Leu Met Ser Ile Leu Thr Ile Ala Ser Ala Val | |
| 225 230 235 240 | |

| | |
|---|------|
| ctg gag ttc gtg ggt gac ggg atc tat aac aac acc atg ggc cac gtg | 768 |
| Leu Glu Phe Val Gly Asp Gly Ile Tyr Asn Asn Thr Met Gly His Val | |
| 245 250 255 | |
| cac agc cac ttg cag gga gag gtg ttt ggg gct gtc ctg cgc cag gag | 816 |
| His Ser His Leu Gln Gly Glu Val Phe Gly Ala Val Leu Arg Gln Glu | |
| 260 265 270 | |
| acg gag ttt ttc caa cag aac cag aca ggt aac atc atg tct cgg gta | 864 |
| Thr Glu Phe Phe Gln Gln Asn Gln Thr Gly Asn Ile Met Ser Arg Val | |
| 275 280 285 | |
| aca gag gac acg tcc acc ctg agt gat tct ctg agt gag aat ctg agc | 912 |
| Thr Glu Asp Thr Ser Thr Leu Ser Asp Ser Leu Ser Glu Asn Leu Ser | |
| 290 295 300 | |
| tta ttt ctg tgg tac ctg gtg cga ggc cta tgt ctc ttg ggg atc atg | 960 |
| Leu Phe Leu Trp Tyr Leu Val Arg Gly Leu Cys Leu Leu Gly Ile Met | |
| 305 310 315 320 | |
| ctc tgg gga tca gtg tcc ctc acc atg gtc acc ctg gtc acc ctg cct | 1008 |
| Leu Trp Gly Ser Val Ser Leu Thr Met Val Thr Leu Val Thr Leu Pro | |
| 325 330 335 | |
| ctg ctt ttc ctt ctg ccc aag aag gtg gga aaa tgg tac cag ttg ctg | 1056 |
| Leu Leu Phe Leu Leu Pro Lys Lys Val Gly Lys Trp Tyr Gln Leu Leu | |
| 340 345 350 | |
| gaa gtg cag gtg cgg gaa tct ctg gca aag tcc agc cag gtg gcc att | 1104 |
| Glu Val Gln Val Arg Glu Ser Leu Ala Lys Ser Ser Gln Val Ala Ile | |
| 355 360 365 | |
| gag gct ctg tcg gcc atg cct aca gtt cga agc ttt gcc aac gag gag | 1152 |
| Glu Ala Leu Ser Ala Met Pro Thr Val Arg Ser Phe Ala Asn Glu Glu | |
| 370 375 380 | |
| ggc gaa gcc cag aag ttt agg gaa aag ctg caa gaa ata aag aca ctc | 1200 |
| Gly Glu Ala Gln Lys Phe Arg Glu Lys Leu Gln Glu Ile Lys Thr Leu | |
| 385 390 395 400 | |
| aac cag aag gag gct gtg gcc tat gca gtc aac tcc tgg acc act agt | 1248 |
| Asn Gln Lys Glu Ala Val Ala Tyr Ala Val Asn Ser Trp Thr Thr Ser | |
| 405 410 415 | |
| att tca ggt atg ctg ctg aaa gtg gga atc ctc tac att ggt ggg cag | 1296 |
| Ile Ser Gly Met Leu Leu Lys Val Gly Ile Leu Tyr Ile Gly Gly Gln | |
| 420 425 430 | |
| ctg gtg acc agt ggg gct gta agc agt ggg aac ctt gtc aca ttt gtt | 1344 |
| Leu Val Thr Ser Gly Ala Val Ser Ser Gly Asn Leu Val Thr Phe Val | |
| 435 440 445 | |
| ctc tac cag atg cag ttc acc cag gct ttg gag gta ctg ctc tcc atc | 1392 |
| Leu Tyr Gln Met Gln Phe Thr Gln Ala Leu Glu Val Leu Leu Ser Ile | |
| 450 455 460 | |

| | |
|---|------|
| tac ccc aga gta cag aag gct gtg ggc tcc tca gag aaa ata ttt gag | 1440 |
| Tyr Pro Arg Val Gln Lys Ala Val Gly Ser Ser Glu Lys Ile Phe Glu | |
| 465 470 475 480 | |
| tac ctg gac cgc acc cct cgc tgc cca ccc agt ggt ctg ttg act ccc | 1488 |
| Tyr Leu Asp Arg Thr Pro Arg Cys Pro Pro Ser Gly Leu Leu Thr Pro | |
| 485 490 495 | |
| tta cac ttg gag ggc ctt gtc cag ttc caa gat gtc tcc ttt gcc tac | 1536 |
| Leu His Leu Glu Gly Leu Val Gln Phe Gln Asp Val Ser Phe Ala Tyr | |
| 500 505 510 | |
| cca aac cgc cca gat gtc tta gtg cta cag ggg ctg aca ttc acc cta | 1584 |
| Pro Asn Arg Pro Asp Val Leu Val Leu Gln Gly Leu Thr Phe Thr Leu | |
| 515 520 525 | |
| cgc cct ggc gag gtg acg gcg ctg gtg gga ccc aat ggg tct ggg aag | 1632 |
| Arg Pro Gly Glu Val Thr Ala Leu Val Gly Pro Asn Gly Ser Gly Lys | |
| 530 535 540 | |
| agc aca gtg gct gcc ctg ctg cag aat ctg tac cag ccc acc ggg gga | 1680 |
| Ser Thr Val Ala Ala Leu Leu Gln Asn Leu Tyr Gln Pro Thr Gly Gly | |
| 545 550 555 560 | |
| cag ctg ctg ttg gat ggg aag ccc ctt ccc caa tat gag cac cgc tac | 1728 |
| Gln Leu Leu Leu Asp Gly Lys Pro Leu Pro Gln Tyr Glu His Arg Tyr | |
| 565 570 575 | |
| ctg cac agg cag gtg gct gca gtg gga caa gag cca cag gta ttt gga | 1776 |
| Leu His Arg Gln Val Ala Ala Val Gly Gln Glu Pro Gln Val Phe Gly | |
| 580 585 590 | |
| aga agt ctt caa gaa aat att gcc tat ggc ctg acc cag aag cca act | 1824 |
| Arg Ser Leu Gln Glu Asn Ile Ala Tyr Gly Leu Thr Gln Lys Pro Thr | |
| 595 600 605 | |
| atg gag gaa atc aca gct gct gca gta aag tct ggg gcc cat agt ttc | 1872 |
| Met Glu Glu Ile Thr Ala Ala Val Lys Ser Gly Ala His Ser Phe | |
| 610 615 620 | |
| atc tct gga ctc cct cag ggc tat gac aca gag gta ggc gag gct ggg | 1920 |
| Ile Ser Gly Leu Pro Gln Gly Tyr Asp Thr Glu Val Gly Glu Ala Gly | |
| 625 630 635 640 | |
| agc cag ctg tca ggg ggt cag caa cag gca gtg gcg ttg gcc cga gca | 1968 |
| Ser Gln Leu Ser Gly Gly Gln Gln Gln Ala Val Ala Leu Ala Arg Ala | |
| 645 650 655 | |
| ttg atc cgg aaa ccg tgt gta ctt atc ctg gat gat gcc acc agt gcc | 2016 |
| Leu Ile Arg Lys Pro Cys Val Leu Ile Leu Asp Asp Ala Thr Ser Ala | |
| 660 665 670 | |
| ctg gat gca aac agc cag tta cag gtg gag cag ctc ctg tac gaa agc | 2064 |
| Leu Asp Ala Asn Ser Gln Leu Gln Val Glu Gln Leu Leu Tyr Glu Ser | |
| 675 680 685 | |

cct gag cgg tac tcc cgc tca gtg ctt ctc atc acc cag cac ctc agc 2112
 Pro Glu Arg Tyr Ser Arg Ser Val Leu Leu Ile Thr Gln His Leu Ser
 690 695 700

ctg gtg gag cag gct gac cac atc ctc ttt ctg gaa gga ggc gct atc 2160
 Leu Val Glu Gln Ala Asp His Ile Leu Phe Leu Glu Gly Gly Ala Ile
 705 710 715 720

cgg gag ggg gga acc cac cag cag ctc atg gag aaa aag ggg tgc tac 2208
 Arg Glu Gly Gly Thr His Gln Gln Leu Met Glu Lys Lys Gly Cys Tyr
 725 730 735

tgg gcc atg gtg cag gct cct gca gat gct cca gaa tga 2247
 Trp Ala Met Val Gln Ala Pro Ala Asp Ala Pro Glu
 740 745

<210> 41
 <211> 748
 <212> PRT
 <213> Homo sapiens

<400> 41

Met Ala Ser Ser Arg Cys Pro Ala Pro Arg Gly Cys Arg Cys Leu Pro
 1 5 10 15

Gly Ala Ser Leu Ala Trp Leu Gly Thr Val Leu Leu Leu Leu Ala Asp
 20 25 30

Trp Val Leu Leu Arg Thr Ala Leu Pro Arg Ile Phe Ser Leu Leu Val
 35 40 45

Pro Thr Ala Leu Pro Leu Leu Arg Val Trp Ala Val Gly Leu Ser Arg
 50 55 60

Trp Ala Val Leu Trp Leu Gly Ala Cys Gly Val Leu Arg Ala Thr Val
 65 70 75 80

Gly Ser Lys Ser Glu Asn Ala Gly Ala Gln Gly Trp Leu Ala Ala Leu
 85 90 95

Lys Pro Leu Ala Ala Ala Leu Gly Leu Ala Leu Pro Gly Leu Ala Leu
 100 105 110

Phe Arg Glu Leu Ile Ser Trp Gly Ala Pro Gly Ser Ala Asp Ser Thr
 115 120 125

Arg Leu Leu His Trp Gly Ser His Pro Thr Ala Phe Val Val Ser Tyr
130 135 140

Ala Ala Ala Leu Pro Ala Ala Ala Leu Trp His Lys Leu Gly Ser Leu
145 150 155 160

Trp Val Pro Gly Gly Gln Gly Gly Ser Gly Asn Pro Val Arg Arg Leu
165 170 175

Leu Gly Cys Leu Gly Ser Glu Thr Arg Arg Leu Ser Leu Phe Leu Val
180 185 190

Leu Val Val Leu Ser Ser Leu Gly Glu Met Ala Ile Pro Phe Phe Thr
195 200 205

Gly Arg Leu Thr Asp Trp Ile Leu Gln Asp Gly Ser Ala Asp Thr Phe
210 215 220

Thr Arg Asn Leu Thr Leu Met Ser Ile Leu Thr Ile Ala Ser Ala Val
225 230 235 240

Leu Glu Phe Val Gly Asp Gly Ile Tyr Asn Asn Thr Met Gly His Val
245 250 255

His Ser His Leu Gln Gly Glu Val Phe Gly Ala Val Leu Arg Gln Glu
260 265 270

Thr Glu Phe Phe Gln Gln Asn Gln Thr Gly Asn Ile Met Ser Arg Val
275 280 285

Thr Glu Asp Thr Ser Thr Leu Ser Asp Ser Leu Ser Glu Asn Leu Ser
290 295 300

Leu Phe Leu Trp Tyr Leu Val Arg Gly Leu Cys Leu Leu Gly Ile Met
305 310 315 320

Leu Trp Gly Ser Val Ser Leu Thr Met Val Thr Leu Val Thr Leu Pro
325 330 335

Leu Leu Phe Leu Leu Pro Lys Lys Val Gly Lys Trp Tyr Gln Leu Leu
340 345 350

[illegible]

Glu Val Gln Val Arg Glu Ser Leu Ala Lys Ser Ser Gln Val Ala Ile
355 360 365

Glu Ala Leu Ser Ala Met Pro Thr Val Arg Ser Phe Ala Asn Glu Glu
370 375 380

Gly Glu Ala Gln Lys Phe Arg Glu Lys Leu Gln Glu Ile Lys Thr Leu
385 390 395 400

Asn Gln Lys Glu Ala Val Ala Tyr Ala Val Asn Ser Trp Thr Thr Ser
405 410 415

Ile Ser Gly Met Leu Leu Lys Val Gly Ile Leu Tyr Ile Gly Gly Gln
420 425 430

Leu Val Thr Ser Gly Ala Val Ser Ser Gly Asn Leu Val Thr Phe Val
435 440 445

Leu Tyr Gln Met Gln Phe Thr Gln Ala Leu Glu Val Leu Leu Ser Ile
450 455 460

Tyr Pro Arg Val Gln Lys Ala Val Gly Ser Ser Glu Lys Ile Phe Glu
465 470 475 480

Tyr Leu Asp Arg Thr Pro Arg Cys Pro Pro Ser Gly Leu Leu Thr Pro
485 490 495

Leu His Leu Glu Gly Leu Val Gln Phe Gln Asp Val Ser Phe Ala Tyr
500 505 510

Pro Asn Arg Pro Asp Val Leu Val Leu Gln Gly Leu Thr Phe Thr Leu
 , 515 520 525

Arg Pro Gly Glu Val Thr Ala Leu Val Gly Pro Asn Gly Ser Gly Lys
530 535 540

Ser Thr Val Ala Ala Leu Leu Gln Asn Leu Tyr Gln Pro Thr Gly Gly
545 550 555 560

Gln Leu Leu Leu Asp Gly Lys Pro Leu Pro Gln Tyr Glu His Arg Tyr
565 570 575

Leu His Arg Gln Val Ala Ala Val Gly Gln Glu Pro Gln Val Phe Gly
580 585 590

Arg Ser Leu Gln Glu Asn Ile Ala Tyr Gly Leu Thr Gln Lys Pro Thr
595 600 605

Met Glu Glu Ile Thr Ala Ala Ala Val Lys Ser Gly Ala His Ser Phe
610 615 620

Ile Ser Gly Leu Pro Gln Gly Tyr Asp Thr Glu Val Gly Glu Ala Gly
625 630 635 640

Ser Gln Leu Ser Gly Gly Gln Gln Gln Ala Val Ala Leu Ala Arg Ala
645 650 655

Leu Ile Arg Lys Pro Cys Val Leu Ile Leu Asp Asp Ala Thr Ser Ala
660 665 670

Leu Asp Ala Asn Ser Gln Leu Gln Val Glu Gln Leu Leu Tyr Glu Ser
675 680 685

Pro Glu Arg Tyr Ser Arg Ser Val Leu Leu Ile Thr Gln His Leu Ser
690 695 700

Leu Val Glu Gln Ala Asp His Ile Leu Phe Leu Glu Gly Gly Ala Ile
705 710 715 720

Arg Glu Gly Gly Thr His Gln Gln Leu Met Glu Lys Lys Gly Cys Tyr
725 730 735

Trp Ala Met Val Gln Ala Pro Ala Asp Ala Pro Glu
740 745

<210> 42
<211> 2085
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (65)..(2005)
<223>

<400> 42

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| gtgcagctct tgggtttttt gtggcttccct tcgttattgg agccaggcct acaccccagc | 60 |
| aacc atg tcc aag gga cct gca gtt ggt att gat ctt ggc acc acc tac | 109 |
| Met Ser Lys Gly Pro Ala Val Gly Ile Asp Leu Gly Thr Thr Tyr | |
| 1 5 10 15 | |
| tct tgt gtg ggt gtt ttc cag cac gga aaa gtc gag ata att gcc aat | 157 |
| Ser Cys Val Gly Val Phe Gln His Gly Lys Val Glu Ile Ile Ala Asn | |
| 20 25 30 | |
| gat cag gga aac cga acc act cca agc tat gtc gcc ttt acg gac act | 205 |
| Asp Gln Gly Asn Arg Thr Thr Pro Ser Tyr Val Ala Phe Thr Asp Thr | |
| 35 40 45 | |
| gaa cgg ttg atc ggt gat gcc gca aag aat caa gtt gca atg aac ccc | 253 |
| Glu Arg Leu Ile Gly Asp Ala Ala Lys Asn Gln Val Ala Met Asn Pro | |
| 50 55 60 | |
| acc aac aca gtt ttt gat gcc aaa cgt ctg att gga cgc aga ttt gat | 301 |
| Thr Asn Thr Val Phe Asp Ala Lys Arg Leu Ile Gly Arg Arg Phe Asp | |
| 65 70 75 | |
| gat gct gtt gtc cag tct gat atg aaa cat tgg ccc ttt atg gtg gtg | 349 |
| Asp Ala Val Val Gln Ser Asp Met Lys His Trp Pro Phe Met Val Val | |
| 80 85 90 95 | |
| aat gat gct ggc agg ccc aag gtc caa gta gaa tac aag gga gag acc | 397 |
| Asn Asp Ala Gly Arg Pro Lys Val Gln Val Glu Tyr Lys Gly Glu Thr | |
| 100 105 110 | |
| aaa agc ttc tat cca gag gag gtg tct tct atg gtt ctg aca aag atg | 445 |
| Lys Ser Phe Tyr Pro Glu Glu Val Ser Ser Met Val Leu Thr Lys Met | |
| 115 120 125 | |
| aag gaa att gca gaa gcc tac ctt ggg aag act gtt acc aat gct gtg | 493 |
| Lys Glu Ile Ala Glu Ala Tyr Leu Gly Lys Thr Val Thr Asn Ala Val | |
| 130 135 140 | |
| gtc aca gtg cca gct tac ttt aat gac tct cag cgt cag gct acc aaa | 541 |
| Val Thr Val Pro Ala Tyr Phe Asn Asp Ser Gln Arg Gln Ala Thr Lys | |
| 145 150 155 | |
| gat gct gga act att gct ggt ctc aat gta ctt aga att att aat gag | 589 |
| Asp Ala Gly Thr Ile Ala Gly Leu Asn Val Leu Arg Ile Ile Asn Glu | |
| 160 165 170 175 | |
| cca act gct gct gct att gct tac ggc tta gac aaa aag gtt gga gca | 637 |
| Pro Thr Ala Ala Ala Ile Ala Tyr Gly Leu Asp Lys Lys Val Gly Ala | |
| 180 185 190 | |
| gaa aga aac gtg ctc atc ttt gac ctg gga ggt ggc act ttt gat gtg | 685 |
| Glu Arg Asn Val Leu Ile Phe Asp Leu Gly Gly Gly Thr Phe Asp Val | |
| 195 200 205 | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| tca | atc | ctc | act | att | gag | gat | gga | atc | ttt | gag | gtc | aag | tct | aca | gct | 733 |
| Ser | Ile | Leu | Thr | Ile | Glu | Asp | Gly | Ile | Phe | Glu | Val | Lys | Ser | Thr | Ala | |
| | | 210 | | | | | 215 | | | | | 220 | | | | |
| gga | gac | acc | cac | ttg | ggt | gga | gaa | gat | ttt | gac | aac | cga | atg | gtc | aac | 781 |
| Gly | Asp | Thr | His | Leu | Gly | Gly | Glu | Asp | Phe | Asp | Asn | Arg | Met | Val | Asn | |
| | | 225 | | | | 230 | | | | | 235 | | | | | |
| cat | ttt | att | gct | gag | ttt | aag | cgc | aag | cat | aag | aag | gac | atc | agt | gag | 829 |
| His | Phe | Ile | Ala | Glu | Phe | Lys | Arg | Lys | His | Lys | Lys | Asp | Ile | Ser | Glu | |
| 240 | | | | | 245 | | | | | 250 | | | | | 255 | |
| aac | aag | aga | gct | gta | aga | cgc | ctc | cgt | act | gct | tgt | gaa | cgt | gct | aag | 877 |
| Asn | Lys | Arg | Ala | Val | Arg | Arg | Leu | Arg | Thr | Ala | Cys | Glu | Arg | Ala | Lys | |
| | | | | 260 | | | | | 265 | | | | | 270 | | |
| cgt | acc | ctc | tct | tcc | agc | acc | cag | gcc | agt | att | gag | atc | gat | tct | ctc | 925 |
| Arg | Thr | Leu | Ser | Ser | Ser | Thr | Gln | Ala | Ser | Ile | Glu | Ile | Asp | Ser | Leu | |
| | | | 275 | | | | | 280 | | | | | 285 | | | |
| tat | gaa | gga | atc | gac | ttc | tat | acc | tcc | att | acc | cgt | gcc | cga | ttt | gaa | 973 |
| Tyr | Glu | Gly | Ile | Asp | Phe | Tyr | Thr | Ser | Ile | Thr | Arg | Ala | Arg | Phe | Glu | |
| | | 290 | | | | | 295 | | | | | 300 | | | | |
| gaa | ctg | aat | gct | gac | ctg | ttc | cgt | ggc | acc | ctg | gac | cca | gta | gag | aaa | 1021 |
| Glu | Leu | Asn | Ala | Asp | Leu | Phe | Arg | Gly | Thr | Leu | Asp | Pro | Val | Glu | Lys | |
| | | 305 | | | | 310 | | | | | 315 | | | | | |
| gcc | ctt | cga | gat | gcc | aaa | cta | gac | aag | tca | cag | att | cat | gat | att | gtc | 1069 |
| Ala | Leu | Arg | Asp | Ala | Lys | Leu | Asp | Lys | Ser | Gln | Ile | His | Asp | Ile | Val | |
| 320 | | | | | 325 | | | | | 330 | | | | | 335 | |
| ctg | gtt | ggt | ggt | tct | act | cgt | atc | ccc | aag | att | cag | aag | ctt | ctc | caa | 1117 |
| Leu | Val | Gly | Gly | Ser | Thr | Arg | Ile | Pro | Lys | Ile | Gln | Lys | Leu | Leu | Gln | |
| | | | | 340 | | | | | 345 | | | | | 350 | | |
| gac | ttc | ttc | aat | gga | aaa | gaa | ctg | aat | aag | agc | atc | aac | cct | gat | gaa | 1165 |
| Asp | Phe | Phe | Asn | Gly | Lys | Glu | Leu | Asn | Lys | Ser | Ile | Asn | Pro | Asp | Glu | |
| | | | 355 | | | | | 360 | | | | | 365 | | | |
| gct | gtt | gct | tat | ggt | gca | gct | gtc | cag | gca | gcc | atc | ttg | tct | gga | gac | 1213 |
| Ala | Val | Ala | Tyr | Gly | Ala | Ala | Val | Gln | Ala | Ala | Ile | Leu | Ser | Gly | Asp | |
| | | | 370 | | | | 375 | | | | | | 380 | | | |
| aag | tct | gag | aat | gtt | caa | gat | ttg | ctg | ctc | ttg | gat | gtc | act | cct | ctt | 1261 |
| Lys | Ser | Glu | Asn | Val | Gln | Asp | Leu | Leu | Leu | Leu | Asp | Val | Thr | Pro | Leu | |
| | | 385 | | | | 390 | | | | | 395 | | | | | |
| tcc | ctt | ggt | att | gaa | act | gct | ggt | gga | gtc | atg | act | gtc | ctc | atc | aag | 1309 |
| Ser | Leu | Gly | Ile | Glu | Thr | Ala | Gly | Gly | Val | Met | Thr | Val | Leu | Ile | L | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| tct | gac | aac | cag | cct | ggt | gtg | ctt | att | cag | gtt | tat | gaa | ggc | gag | cgt | 1405 |
| Ser | Asp | Asn | Gln | Pro | Gly | Val | Leu | Ile | Gln | Val | Tyr | Glu | Gly | Glu | Arg | |
| | | | 435 | | | | | 440 | | | | | | 445 | | |
| gcc | atg | aca | aag | gat | aac | aac | ctg | ctt | ggc | aag | ttt | gaa | ctc | aca | ggc | 1453 |
| Ala | Met | Thr | Lys | Asp | Asn | Asn | Leu | Leu | Gly | Lys | Phe | Glu | Leu | Thr | Gly | |
| | | | 450 | | | | 455 | | | | | 460 | | | | |
| ata | cct | cct | gca | ccc | cga | ggt | gtt | cct | cag | att | gaa | gtc | act | ttt | gac | 1501 |
| Ile | Pro | Pro | Ala | Pro | Arg | Gly | Val | Pro | Gln | Ile | Glu | Val | Thr | Phe | Asp | |
| | | | 465 | | | 470 | | | | | 475 | | | | | |
| att | gat | gcc | aat | ggt | ata | ctc | aat | gtc | tct | gct | gtg | gac | aag | agt | acg | 1549 |
| Ile | Asp | Ala | Asn | Gly | Ile | Leu | Asn | Val | Ser | Ala | Val | Asp | Lys | Ser | Thr | |
| 480 | | | | | 485 | | | | 490 | | | | | | 495 | |
| gga | aaa | gag | aac | aag | att | act | atc | act | aat | gac | aag | ggc | cgt | ttg | agc | 1597 |
| Gly | Lys | Glu | Asn | Lys | Ile | Thr | Ile | Thr | Asn | Asp | Lys | Gly | Arg | Leu | Ser | |
| | | | | 500 | | | | | 505 | | | | | 510 | | |
| aag | gaa | gac | att | gaa | cgt | atg | gtc | cag | gaa | gct | gag | aag | tac | aaa | gct | 1645 |
| Lys | Glu | Asp | Ile | Glu | Arg | Met | Val | Gln | Glu | Ala | Glu | Lys | Tyr | Lys | Ala | |
| | | | 515 | | | | | 520 | | | | | 525 | | | |
| gaa | gat | gag | aag | cag | agg | gac | aag | gtg | tca | tcc | aag | aat | tca | ctt | gag | 1693 |
| Glu | Asp | Glu | Lys | Gln | Arg | Asp | Lys | Val | Ser | Ser | Lys | Asn | Ser | Leu | Glu | |
| | | | 530 | | | | 535 | | | | | 540 | | | | |
| tcc | tat | gcc | ttc | aac | atg | aaa | gca | act | gtt | gaa | gat | gag | aaa | ctt | caa | 1741 |
| Ser | Tyr | Ala | Phe | Asn | Met | Lys | Ala | Thr | Val | Glu | Asp | Glu | Lys | Leu | Gln | |
| | | | 545 | | | 550 | | | | | 555 | | | | | |
| ggc | aag | att | aac | gat | gag | gac | aaa | cag | aag | att | ctg | gac | aag | tgt | aat | 1789 |
| Gly | Lys | Ile | Asn | Asp | Glu | Asp | Lys | Gln | Lys | Ile | Leu | Asp | Lys | Cys | Asn | |
| 560 | | | | | 565 | | | | | 570 | | | | | 575 | |
| gaa | att | atc | aac | tgg | ctt | gat | aag | aat | cag | act | gct | gag | aag | gaa | gaa | 1837 |
| Glu | Ile | Ile | Asn | Trp | Leu | Asp | Lys | Asn | Gln | Thr | Ala | Glu | Lys | Glu | Glu | |
| | | | | 580 | | | | | 585 | | | | | 590 | | |
| ttt | gaa | cat | caa | cag | aaa | gag | ctg | gag | aaa | gtt | tgc | aac | ccc | atc | atc | 1885 |
| Phe | Glu | His | Gln | Gln | Lys | Glu | Leu | Glu | Lys | Val | Cys | Asn | Pro | Ile | Ile | |
| | | | 595 | | | | 600 | | | | | | 605 | | | |
| acc | aag | ctg | tac | cag | agt | gca | gga | ggc | atg | cca | gga | gga | atg | cct | ggg | 1933 |
| Thr | Lys | Leu | Tyr | Gln | Ser | Ala | Gly | Gly | Met | Pro | Gly | Gly | Met | Pro | Gly | |
| | | | 610 | | | | 615 | | | | | 620 | | | | |
| gga | ttt | cct | ggt | ggt | gga | gct | cct | ccc | tct | ggt | ggt | gct | tcc | tca | ggg | 1981 |
| Gly | Phe | Pro | Gly | Gly | Gly | Ala | Pro | Pro | Ser | Gly | Gly | Ala | Ser | Ser | Gly | |
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2085

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Cys Val Gly Val Phe Gln His Gly Lys Val Glu Ile Ile Ala Asn Asp
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Gln Gly Asn Arg Thr Thr Pro Ser Tyr Val Ala Phe Thr Asp Thr Glu
 35 40 45

Arg Leu Ile Gly Asp Ala Ala Lys Asn Gln Val Ala Met Asn Pro Thr
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Asn Thr Val Phe Asp Ala Lys Arg Leu Ile Gly Arg Arg Phe Asp Asp
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Ala Val Val Gln Ser Asp Met Lys His Trp Pro Phe Met Val Val Asn
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Asp Ala Gly Arg Pro Lys Val Gln Val Glu Tyr Lys Gly Glu Thr Lys
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Ser Phe Tyr Pro Glu Glu Val Ser Ser Met Val Leu Thr Lys Met Lys
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Glu Ile Ala Glu Ala Tyr Leu Gly Lys Thr Val Thr Asn Ala Val Val
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Thr Val Pro Ala Tyr Phe Asn Asp Ser Gln Arg Gln Ala Thr Lys Asp
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Ala Gly Thr Ile Ala Gly Leu Asn Val Leu Arg Ile Ile Asn Glu Pro
 165 170 175

Thr Ala Ala Ala Ile Ala Tyr Gly Leu Asp Lys Lys Val Gly Ala Glu
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Arg Asn Val Leu Ile Phe Asp Leu Gly Gly Gly Thr Phe Asp Val Ser
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Ile Leu Thr Ile Glu Asp Gly Ile Phe Glu Val Lys Ser Thr Ala Gly
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Asp Thr His Leu Gly Gly Glu Asp Phe Asp Asn Arg Met Val Asn His
 225 230 235 240

Phe Ile Ala Glu Phe Lys Arg Lys His Lys Lys Asp Ile Ser Glu Asn
 245 250 255

Lys Arg Ala Val Arg Arg Leu Arg Thr Ala Cys Glu Arg Ala Lys Arg
 260 265 270

Thr Leu Ser Ser Ser Thr Gln Ala Ser Ile Glu Ile Asp Ser Leu Tyr
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Glu Gly Ile Asp Phe Tyr Thr Ser Ile Thr Arg Ala Arg Phe Glu Glu
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Leu Asn Ala Asp Leu Phe Arg Gly Thr Leu Asp Pro Val Glu Lys Ala
 305 310 315 320

Leu Arg Asp Ala Lys Leu Asp Lys Ser Gln Ile His Asp Ile Val Leu
 325 330 335

Val Gly Gly Ser Thr Arg Ile Pro Lys Ile Gln Lys Leu Leu Gln Asp
 340 345 350

Phe Phe Asn Gly Lys Glu Leu Asn Lys Ser Ile Asn Pro Asp Glu Ala
 355 360 365

Val Ala Tyr Gly Ala Ala Val Gln Ala Ala Ile Leu Ser Gly Asp Lys
 370 375 380

Ser Glu Asn Val Gln Asp Leu Leu Leu Leu Asp Val Thr Pro Leu Ser
 385 390 395 400

Leu Gly Ile Glu Thr Ala Gly Gly Val Met Thr Val Leu Ile Lys Arg
405 410 415

Asn Thr Thr Ile Pro Thr Lys Gln Thr Gln Thr Phe Thr Thr Tyr Ser
420 425 430

Asp Asn Gln Pro Gly Val Leu Ile Gln Val Tyr Glu Gly Glu Arg Ala
435 440 445

Met Thr Lys Asp Asn Asn Leu Leu Gly Lys Phe Glu Leu Thr Gly Ile
450 455 460

Pro Pro Ala Pro Arg Gly Val Pro Gln Ile Glu Val Thr Phe Asp Ile
465 470 475 480

Asp Ala Asn Gly Ile Leu Asn Val Ser Ala Val Asp Lys Ser Thr Gly
485 490 495

Lys Glu Asn Lys Ile Thr Ile Thr Asn Asp Lys Gly Arg Leu Ser Lys
500 505 510

Glu Asp Ile Glu Arg Met Val Gln Glu Ala Glu Lys Tyr Lys Ala Glu
515 520 525

Asp Glu Lys Gln Arg Asp Lys Val Ser Ser Lys Asn Ser Leu Glu Ser
530 535 540

Tyr Ala Phe Asn Met Lys Ala Thr Val Glu Asp Glu Lys Leu Gln Gly
545 550 555 560

Lys Ile Asn Asp Glu Asp Lys Gln Lys Ile Leu Asp Lys Cys Asn Glu
565 570 575

Ile Ile Asn Trp Leu Asp Lys Asn Gln Thr Ala Glu Lys Glu Glu Phe
580 585 590

Glu His Gln Gln Lys Glu Leu Glu Lys Val Cys Asn Pro Ile Ile Thr
595 600 605

Lys Leu Tyr Gln Ser Ala Gly Gly Met Pro Gly Gly Met Pro Gly Gly
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Phe Pro Gly Gly Gly Ala Pro Pro Ser Gly Gly Ala Ser Ser Gly Pro
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atatgacata gagtataagg aggggttttt atg aac aaa aat gtg ttg aag ttt 174
Met Asn Lys Asn Val Leu Lys Phe
1 5
atg gtc ttt ata atg tta tta aat atc atc aca cct tta ttt aat aaa 222
Met Val Phe Ile Met Leu Leu Asn Ile Ile Thr Pro Leu Phe Asn Lys
10 15 20
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Asn Glu Ala Phe Ala Ala Arg Asp Ile Ser Ser Thr Asn Val Thr Asp
25 30 35 40
tta act gta tca ccg tct aag ata gaa gat ggt ggt aaa acg aca gta 318
Leu Thr Val Ser Pro Ser Lys Ile Glu Asp Gly Gly Lys Thr Thr Val
45 50 55
aaa atg acg ttc gac gat aaa aat gga aaa ata caa aat ggt gac atg 366
Lys Met Thr Phe Asp Asp Lys Asn Gly Lys Ile Gln Asn Gly Asp Met
60 65 70
att aaa gtg gca tgg ccg aca agc ggt aca gta aag ata gag ggt tat 414
Ile Lys Val Ala Trp Pro Thr Ser Gly Thr Val Lys Ile Glu Gly Tyr
75 80 85
agt aaa aca gta cca tta act gtt aaa ggt gaa cag gtg ggt caa gca 462
Ser Lys Thr Val Pro Leu Thr Val Lys Gly Glu Gln Val Gly Gln Ala
90 95 100
gtt att aca cca gac ggt gca aca att aca ttc aat gat aaa gta gaa 510
Val Ile Thr Pro Asp Gly Ala Thr Ile Thr Phe Asn Asp Lys Val Glu
105 110 115 120

| | |
|---|------|
| aaa tta agt gat gtt tcg gga ttt gca gaa ttt gaa gta caa gga aga | 558 |
| Lys Leu Ser Asp Val Ser Gly Phe Ala Glu Phe Glu Val Gln Gly Arg | |
| 125 130 135 | |
| aat tta acg caa aca aat act tca gat gac aaa gta gct acg ata aca | 606 |
| Asn Leu Thr Gln Thr Asn Thr Ser Asp Asp Lys Val Ala Thr Ile Thr | |
| 140 145 150 | |
| tct ggg aat aaa tca acg aat gtt acg gtt cat aaa agt gaa gcg gga | 654 |
| Ser Gly Asn Lys Ser Thr Asn Val Thr Val His Lys Ser Glu Ala Gly | |
| 155 160 165 | |
| aca agt agt gtt ttc tat tat aaa acg gga gat atg cta cca gaa gat | 702 |
| Thr Ser Ser Val Phe Tyr Tyr Lys Thr Gly Asp Met Leu Pro Glu Asp | |
| 170 175 180 | |
| acg aca cat gta cga tgg ttt tta aat att aac aat gaa aaa agt tat | 750 |
| Thr Thr His Val Arg Trp Phe Leu Asn Ile Asn Asn Glu Lys Ser Tyr | |
| 185 190 195 200 | |
| gta tcg aaa gat att act ata aag gat cag att caa ggt gga cag cag | 798 |
| Val Ser Lys Asp Ile Thr Ile Lys Asp Gln Ile Gln Gly Gly Gln Gln | |
| 205 210 215 | |
| tta gat tta agc aca tta aac att aat gtg aca ggt aca cat agc aat | 846 |
| Leu Asp Leu Ser Thr Leu Asn Ile Asn Val Thr Gly Thr His Ser Asn | |
| 220 225 230 | |
| tat tat agt gga caa agt gca att act gat ttt gaa aaa gcc ttt cca | 894 |
| Tyr Tyr Ser Gly Gln Ser Ala Ile Thr Asp Phe Glu Lys Ala Phe Pro | |
| 235 240 245 | |
| ggt tct aaa ata act gtt gat aat acg aag aac aca att gat gta aca | 942 |
| Gly Ser Lys Ile Thr Val Asp Asn Thr Lys Asn Thr Ile Asp Val Thr | |
| 250 255 260 | |
| att cca caa ggc tat ggg tca tat aat agt ttt tca att aac tac aaa | 990 |
| Ile Pro Gln Gly Tyr Gly Ser Tyr Asn Ser Phe Ser Ile Asn Tyr Lys | |
| 265 270 275 280 | |
| acc aaa att acg aat gaa cag caa aaa gag ttt gtt aat aat tca caa | 1038 |
| Thr Lys Ile Thr Asn Glu Gln Gln Lys Glu Phe Val Asn Asn Ser Gln | |
| 285 290 295 | |
| gct tgg tat caa gag cat ggt aag gaa gaa gtg aac ggg aaa tca ttt | 1086 |
| Ala Trp Tyr Gln Glu His Gly Lys Glu Glu Val Asn Gly Lys Ser Phe | |
| 300 305 310 | |
| aat cat act gtg cac aat att aat gct aat gcc ggt att gaa ggt act | 1134 |
| Asn His Thr Val His Asn Ile Asn Ala Asn Ala Gly Ile Glu Gly Thr | |
| 315 320 325 | |
| gta aaa ggt gaa tta aaa gtt tta aaa cag gat aaa gat acc aag gct | 1182 |
| Val Lys Gly Glu Leu Lys Val Leu Lys Gln Asp Lys Asp Thr Lys Ala | |
| 330 335 340 | |

| | |
|---|------|
| cct ata gct aat gta aaa ttt aaa ctt tct aaa aaa gat gga tca gtt Pro Ile Ala Asn Val Lys Phe Lys Leu Ser Lys Lys Asp Gly Ser Val 345 350 355 360 | 1230 |
| gta aag gac aat caa aaa gaa att gag att ata aca gat gca aac ggt Val Lys Asp Asn Gln Lys Glu Ile Glu Ile Ile Thr Asp Ala Asn Gly 365 370 375 | 1278 |
| att gct aat att aaa gcg ttg cct agt gga gac tat att tta aaa gaa Ile Ala Asn Ile Lys Ala Leu Pro Ser Gly Asp Tyr Ile Leu Lys Glu 380 385 390 | 1326 |
| ata gag gcg cca cga ccg tat aca ttt gat aag gat aaa gaa tat ccg Ile Glu Ala Pro Arg Pro Tyr Thr Phe Asp Lys Asp Lys Glu Tyr Pro 395 400 405 | 1374 |
| ttt act atg aaa gat aca gat aat cag gga tat ttt acg act att gaa Phe Thr Met Lys Asp Thr Asp Asn Gln Gly Tyr Phe Thr Thr Ile Glu 410 415 420 | 1422 |
| aat gca aaa gcg ata gaa aaa aca aaa gat gtt tct gct caa aag gtt Asn Ala Lys Ala Ile Glu Lys Thr Lys Asp Val Ser Ala Gln Lys Val 425 430 435 440 | 1470 |
| tgg gaa ggc act caa aaa gtg aaa cca acg att tat ttc aag ttg tac Trp Glu Gly Thr Gln Lys Val Lys Pro Thr Ile Tyr Phe Lys Leu Tyr 445 450 455 | 1518 |
| aaa caa gat gac aat caa aat aca aca cca gta gac aaa gca gag att Lys Gln Asp Asp Asn Gln Asn Thr Thr Pro Val Asp Lys Ala Glu Ile 460 465 470 | 1566 |
| aaa aaa tta gaa gat gga acg aca aaa gtg aca tgg tct aat ctt ccg Lys Lys Leu Glu Asp Gly Thr Thr Lys Val Thr Trp Ser Asn Leu Pro 475 480 485 | 1614 |
| gaa aat gac aaa aat ggc aag gct att aaa tat tta gtt aaa gaa gta Glu Asn Asp Lys Asn Gly Lys Ala Ile Lys Tyr Leu Val Lys Glu Val 490 495 500 | 1662 |
| aat gct caa ggt gaa gat aca aca cca gaa gga tat act aaa aaa gaa Asn Ala Gln Gly Glu Asp Thr Thr Pro Glu Gly Tyr Thr Lys Lys Glu 505 510 515 520 | 1710 |
| aat ggt tta gtg gtt act aat act gaa aaa cca atc gaa aca aca tca Asn Gly Leu Val Val Thr Asn Thr Glu Lys Pro Ile Glu Thr Thr Ser 525 530 535 | 1758 |
| att agt ggt gaa aaa gta tgg gac gac aaa gac aat caa gat ggt aag Ile Ser Gly Glu Lys Val Trp Asp Asp Lys Asp Asn Gln Asp Gly Lys 540 545 550 | 1806 |
| aga cca gaa aaa gtc agt gtg aat tta ttg gct aac ggg gag aaa gta Arg Pro Glu Lys Val Ser Val Asn Leu Leu Ala Asn Gly Glu Lys Val 555 560 565 | 1854 |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| aaa | acg | tta | gac | gtg | aca | tct | gaa | aca | aac | tgg | aag | tac | gaa | ttt | aaa | 1902 |
| Lys | Thr | Leu | Asp | Val | Thr | Ser | Glu | Thr | Asn | Trp | Lys | Tyr | Glu | Phe | Lys | |
| | 570 | | | | | 575 | | | | | 580 | | | | | |
| gac | tta | ccg | aag | tat | gat | gaa | gga | aag | aaa | ata | gaa | tat | aca | gtg | acc | 1950 |
| Asp | Leu | Pro | Lys | Tyr | Asp | Glu | Gly | Lys | Lys | Ile | Glu | Tyr | Thr | Val | Thr | |
| 585 | | | | | 590 | | | | | 595 | | | | | 600 | |
| gaa | gat | cac | gta | aaa | gac | tac | aca | aca | gac | atc | aac | ggg | acg | aca | ata | 1998 |
| Glu | Asp | His | Val | Lys | Asp | Tyr | Thr | Thr | Asp | Ile | Asn | Gly | Thr | Thr | Ile | |
| | | | | 605 | | | | | 610 | | | | | 615 | | |
| acg | aac | aag | tat | aca | cca | gga | gag | aca | tcg | gca | aca | gta | aca | aaa | aat | 2046 |
| Thr | Asn | Lys | Tyr | Thr | Pro | Gly | Glu | Thr | Ser | Ala | Thr | Val | Thr | Lys | Asn | |
| | | | 620 | | | | | 625 | | | | | 630 | | | |
| tgg | gat | gac | aat | aat | aac | caa | gac | gga | aaa | cga | cca | act | gaa | atc | aaa | 2094 |
| Trp | Asp | Asp | Asn | Asn | Asn | Gln | Asp | Gly | Lys | Arg | Pro | Thr | Glu | Ile | Lys | |
| | | 635 | | | | | 640 | | | | | 645 | | | | |
| gtt | gag | tta | tat | caa | gat | gga | aaa | gca | aca | gga | aaa | acg | gca | ata | tta | 2142 |
| Val | Glu | Leu | Tyr | Gln | Asp | Gly | Lys | Ala | Thr | Gly | Lys | Thr | Ala | Ile | Leu | |
| | 650 | | | | | 655 | | | | | 660 | | | | | |
| aat | gaa | tct | aat | aac | tgg | aca | cat | acg | tgg | aca | gga | tta | gat | gaa | aaa | 2190 |
| Asn | Glu | Ser | Asn | Asn | Trp | Thr | His | Thr | Trp | Thr | Gly | Leu | Asp | Glu | Lys | |
| 665 | | | | | 670 | | | | | 675 | | | | | 680 | |
| gca | aaa | gga | caa | caa | gta | aaa | tac | aca | gtc | gag | gaa | tta | aca | aag | gtc | 2238 |
| Ala | Lys | Gly | Gln | Gln | Val | Lys | Tyr | Thr | Val | Glu | Glu | Leu | Thr | Lys | Val | |
| | | | | 685 | | | | | 690 | | | | | 695 | | |
| aaa | ggg | tat | aca | aca | cat | gtg | gat | aac | aat | gat | atg | ggg | aac | ttg | att | 2286 |
| Lys | Gly | Tyr | Thr | Thr | His | Val | Asp | Asn | Asn | Asp | Met | Gly | Asn | Leu | Ile | |
| | | 700 | | | | | | 705 | | | | | 710 | | | |
| gtg | acg | aat | aaa | tat | acg | cca | gaa | aca | aca | tca | att | agt | ggg | gaa | aaa | 2334 |
| Val | Thr | Asn | Lys | Tyr | Thr | Pro | Glu | Thr | Thr | Ser | Ile | Ser | Gly | Glu | Lys | |
| | | 715 | | | | | 720 | | | | | 725 | | | | |
| gta | tgg | gac | gac | aaa | gac | aat | caa | gat | ggg | aag | aga | cca | gaa | aaa | gtc | 2382 |
| Val | Trp | Asp | Asp | Lys | Asp | Asn | Gln | Asp | Gly | Lys | Arg | Pro | Glu | Lys | Val | |
| | 730 | | | | | 735 | | | | | 740 | | | | | |
| agt | gtg | aat | tta | ttg | gct | gat | gga | gag | aaa | gta | aaa | acg | tta | gac | gtg | 2430 |
| Ser | Val | Asn | Leu | Leu | Ala | Asp | Gly | Glu | Lys | Val | Lys | Thr | Leu | Asp | Val | |
| 745 | | | | | 750 | | | | | 755 | | | | | 760 | |
| aca | tct | gaa | aca | aac | tgg | aag | tac | gaa | ttt | aaa | gac | tta | ccg | aag | tat | 2478 |
| Thr | Ser | Glu | Thr | Asn | Trp | Lys | Tyr | Glu | Phe | Lys | Asp | Leu | Pro | Lys | Tyr | |
| | | | | 765 | | | | | 770 | | | | | 775 | | |

| | |
|--|------|
| gac tac aca aca gac atc aac ggt acg aca ata acg aac aag tat aca Asp Tyr Thr Thr Asp Ile Asn Gly Thr Thr Ile Thr Asn Lys Tyr Thr 795 800 805 | 2574 |
| cca gga gag aca tcg gca aca gta aca aaa aat tgg gat gac aat aat Pro Gly Glu Thr Ser Ala Thr Val Thr Lys Asn Trp Asp Asp Asn Asn 810 815 820 | 2622 |
| aac caa gac gga aaa cga cca act gaa atc aaa gtt gag tta tat caa Asn Gln Asp Gly Lys Arg Pro Thr Glu Ile Lys Val Glu Leu Tyr Gln 825 830 835 840 | 2670 |
| gat gga aaa gca aca gga aaa acg gca ata tta aat gaa tct aat aac Asp Gly Lys Ala Thr Gly Lys Thr Ala Ile Leu Asn Glu Ser Asn Asn 845 850 855 | 2718 |
| tgg aca cat acg tgg aca gga tta gat gaa aaa gca aaa gga caa caa Trp Thr His Thr Trp Thr Gly Leu Asp Glu Lys Ala Lys Gly Gln Gln 860 865 870 | 2766 |
| gta aaa tac aca gtc gag gaa tta aca aag gtc aaa ggt tat aca aca Val Lys Tyr Thr Val Glu Glu Leu Thr Lys Val Lys Gly Tyr Thr Thr 875 880 885 | 2814 |
| cat gtg gat aac aat gat atg ggc aac ttg att gtg acg aat aaa tat His Val Asp Asn Asn Asp Met Gly Asn Leu Ile Val Thr Asn Lys Tyr 890 895 900 | 2862 |
| acg cca gaa aca aca tca att agt ggt gaa aaa gta tgg gac gac aaa Thr Pro Glu Thr Thr Ser Ile Ser Gly Glu Lys Val Trp Asp Asp Lys 905 910 915 920 | 2910 |
| gac aat caa gat ggt aag aga cca gaa aaa gtc agt gtg aat tta ttg Asp Asn Gln Asp Gly Lys Arg Pro Glu Lys Val Ser Val Asn Leu Leu 925 930 935 | 2958 |
| gct aac gga gag aaa gta aaa acg tta gac gtg aca tct gaa aca aac Ala Asn Gly Glu Lys Val Lys Thr Leu Asp Val Thr Ser Glu Thr Asn 940 945 950 | 3006 |
| tgg aag tac gaa ttt aaa gac tta ccg aag tat gat gaa gga aag aaa Trp Lys Tyr Glu Phe Lys Asp Leu Pro Lys Tyr Asp Glu Gly Lys Lys 955 960 965 | 3054 |
| ata gaa tat aca gtg acc gaa gat cac gta aaa gac tac aca aca gac Ile Glu Tyr Thr Val Thr Glu Asp His Val Lys Asp Tyr Thr Thr Asp 970 975 980 | 3102 |
| atc aac ggt acg aca ata acg aac aag tat aca cca gga gag aca tcg Ile Asn Gly Thr Thr Ile Thr Asn Lys Tyr Thr Pro Gly Glu Thr Ser 985 990 995 1000 | 3150 |
| gca aca gta aca aaa aat tgg gat gac aat aat aac caa gac gga Ala Thr Val Thr Lys Asn Trp Asp Asp Asn Asn Asn Gln Asp Gly 1005 1010 1015 | 3195 |

| | |
|--|------|
| aaa cga cca act gaa atc aaa gtt gag tta tat caa gat gga aaa | 3240 |
| Lys Arg Pro Thr Glu Ile Lys Val Glu Leu Tyr Gln Asp Gly Lys | |
| 1020 1025 1030 | |
| gca aca gga aaa acg gca ata tta aat gaa tct aat aac tgg aca | 3285 |
| Ala Thr Gly Lys Thr Ala Ile Leu Asn Glu Ser Asn Asn Trp Thr | |
| 1035 1040 1045 | |
| cat acg tgg aca gga tta gat gaa aaa gca aaa gga caa caa gta | 3330 |
| His Thr Trp Thr Gly Leu Asp Glu Lys Ala Lys Gly Gln Gln Val | |
| 1050 1055 1060 | |
| aaa tac aca gtc gat gaa tta aca aaa gtt aat ggc tat aca acg | 3375 |
| Lys Tyr Thr Val Asp Glu Leu Thr Lys Val Asn Gly Tyr Thr Thr | |
| 1065 1070 1075 | |
| cat gtg gat aac aat gat atg ggt aac ttg att gtg aca aat aaa | 3420 |
| His Val Asp Asn Asn Asp Met Gly Asn Leu Ile Val Thr Asn Lys | |
| 1080 1085 1090 | |
| tat acg ccg aaa aaa ccg aat aaa cca atc tat cct gaa aaa cca | 3465 |
| Tyr Thr Pro Lys Lys Pro Asn Lys Pro Ile Tyr Pro Glu Lys Pro | |
| 1095 1100 1105 | |
| aaa gac aaa aca cca cca act aaa cct gat cat tct aat aaa gtt | 3510 |
| Lys Asp Lys Thr Pro Pro Thr Lys Pro Asp His Ser Asn Lys Val | |
| 1110 1115 1120 | |
| aaa cca act ccc cca gat aag cca tca aaa gtg gat aag gat gat | 3555 |
| Lys Pro Thr Pro Pro Asp Lys Pro Ser Lys Val Asp Lys Asp Asp | |
| 1125 1130 1135 | |
| caa cct aaa gat aat aaa acc aaa cct gaa aat cct cta aaa gaa | 3600 |
| Gln Pro Lys Asp Asn Lys Thr Lys Pro Glu Asn Pro Leu Lys Glu | |
| 1140 1145 1150 | |
| tta cca aaa act ggt atg aag att ata act tca tgg att aca tgg | 3645 |
| Leu Pro Lys Thr Gly Met Lys Ile Ile Thr Ser Trp Ile Thr Trp | |
| 1155 1160 1165 | |
| gta ttt ata ggt ata ttg gga ctg tat tta att tta aga aaa aga | 3690 |
| Val Phe Ile Gly Ile Leu Gly Leu Tyr Leu Ile Leu Arg Lys Arg | |
| 1170 1175 1180 | |
| ttt aac tca taa accattataa ttatttttat agataaggct attccttagtt | 3742 |
| Phe Asn Ser | |
| ctatgtataa tacatgtata ttaataggtc actttttaatc tgtatgtaag cagactaaga | 3802 |
| gtggcctttt aaacaaataa aaaaa | 3827 |

<210> 45
 <211> 1183
 <212> PRT
 <213> Staphylococcus aureus

<400> 45

Met Asn Lys Asn Val Leu Lys Phe Met Val Phe Ile Met Leu Leu Asn
 1 5 10 15

Ile Ile Thr Pro Leu Phe Asn Lys Asn Glu Ala Phe Ala Ala Arg Asp
 20 25 30

Ile Ser Ser Thr Asn Val Thr Asp Leu Thr Val Ser Pro Ser Lys Ile
 35 40 45

Glu Asp Gly Gly Lys Thr Thr Val Lys Met Thr Phe Asp Asp Lys Asn
 50 55 60

Gly Lys Ile Gln Asn Gly Asp Met Ile Lys Val Ala Trp Pro Thr Ser
 65 70 75 80

Gly Thr Val Lys Ile Glu Gly Tyr Ser Lys Thr Val Pro Leu Thr Val
 85 90 95

Lys Gly Glu Gln Val Gly Gln Ala Val Ile Thr Pro Asp Gly Ala Thr
 100 105 110

Ile Thr Phe Asn Asp Lys Val Glu Lys Leu Ser Asp Val Ser Gly Phe
 115 120 125

Ala Glu Phe Glu Val Gln Gly Arg Asn Leu Thr Gln Thr Asn Thr Ser
 130 135 140

Asp Asp Lys Val Ala Thr Ile Thr Ser Gly Asn Lys Ser Thr Asn Val
 145 150 155 160

Thr Val His Lys Ser Glu Ala Gly Thr Ser Ser Val Phe Tyr Tyr Lys
 165 170 175

Thr Gly Asp Met Leu Pro Glu Asp Thr Thr His Val Arg Trp Phe Leu
 180 185 190

Asn Ile Asn Asn Glu Lys Ser Tyr Val Ser Lys Asp Ile Thr Ile Lys
195 200 205

Asp Gln Ile Gln Gly Gly Gln Gln Leu Asp Leu Ser Thr Leu Asn Ile
210 215 220

Asn Val Thr Gly Thr His Ser Asn Tyr Tyr Ser Gly Gln Ser Ala Ile
225 230 235 240

Thr Asp Phe Glu Lys Ala Phe Pro Gly Ser Lys Ile Thr Val Asp Asn
245 250 255

Thr Lys Asn Thr Ile Asp Val Thr Ile Pro Gln Gly Tyr Gly Ser Tyr
260 265 270

Asn Ser Phe Ser Ile Asn Tyr Lys Thr Lys Ile Thr Asn Glu Gln Gln
275 280 285

Lys Glu Phe Val Asn Asn Ser Gln Ala Trp Tyr Gln Glu His Gly Lys
290 295 300

Glu Glu Val Asn Gly Lys Ser Phe Asn His Thr Val His Asn Ile Asn
305 310 315 320

Ala Asn Ala Gly Ile Glu Gly Thr Val Lys Gly Glu Leu Lys Val Leu
325 330 335

Lys Gln Asp Lys Asp Thr Lys Ala Pro Ile Ala Asn Val Lys Phe Lys
340 345 350

Leu Ser Lys Lys Asp Gly Ser Val Val Lys Asp Asn Gln Lys Glu Ile
355 360 365

Glu Ile Ile Thr Asp Ala Asn Gly Ile Ala Asn Ile Lys Ala Leu Pro
370 375 380

Ser Gly Asp Tyr Ile Leu Lys Glu Ile Glu Ala Pro Arg Pro Tyr Thr
385 390 395 400

Phe Asp Lys Asp Lys Glu Tyr Pro Phe Thr Met Lys Asp Thr Asp Asn
405 410 415

Gln Gly Tyr Phe Thr Thr Ile Glu Asn Ala Lys Ala Ile Glu Lys Thr
420 425 430

Lys Asp Val Ser Ala Gln Lys Val Trp Glu Gly Thr Gln Lys Val Lys
435 440 445

Pro Thr Ile Tyr Phe Lys Leu Tyr Lys Gln Asp Asp Asn Gln Asn Thr
450 455 460

Thr Pro Val Asp Lys Ala Glu Ile Lys Lys Leu Glu Asp Gly Thr Thr
465 470 475 480

Lys Val Thr Trp Ser Asn Leu Pro Glu Asn Asp Lys Asn Gly Lys Ala
485 490 495

Ile Lys Tyr Leu Val Lys Glu Val Asn Ala Gln Gly Glu Asp Thr Thr
500 505 510

Pro Glu Gly Tyr Thr Lys Lys Glu Asn Gly Leu Val Val Thr Asn Thr
515 520 525

Glu Lys Pro Ile Glu Thr Thr Ser Ile Ser Gly Glu Lys Val Trp Asp
530 535 540

Asp Lys Asp Asn Gln Asp Gly Lys Arg Pro Glu Lys Val Ser Val Asn
545 550 555 560

Leu Leu Ala Asn Gly Glu Lys Val Lys Thr Leu Asp Val Thr Ser Glu
565 570 575

Thr Asn Trp Lys Tyr Glu Phe Lys Asp Leu Pro Lys Tyr Asp Glu Gly
580 585 590

Lys Lys Ile Glu Tyr Thr Val Thr Glu Asp His Val Lys Asp Tyr Thr
595 600 605

Thr Asp Ile Asn Gly Thr Thr Ile Thr Asn Lys Tyr Thr Pro Gly Glu
610 615 620

Thr Ser Ala Thr Val Thr Lys Asn Trp Asp Asp Asn Asn Asn Gln Asp
625 630 635 640

Gly Lys Arg Pro Thr Glu Ile Lys Val Glu Leu Tyr Gln Asp Gly Lys
 645 650 655

Ala Thr Gly Lys Thr Ala Ile Leu Asn Glu Ser Asn Asn Trp Thr His
 660 665 670

Thr Trp Thr Gly Leu Asp Glu Lys Ala Lys Gly Gln Gln Val Lys Tyr
 675 680 685

Thr Val Glu Glu Leu Thr Lys Val Lys Gly Tyr Thr Thr His Val Asp
 690 695 700

Asn Asn Asp Met Gly Asn Leu Ile Val Thr Asn Lys Tyr Thr Pro Glu
 705 710 715 720

Thr Thr Ser Ile Ser Gly Glu Lys Val Trp Asp Asp Lys Asp Asn Gln
 725 730 735

Asp Gly Lys Arg Pro Glu Lys Val Ser Val Asn Leu Leu Ala Asp Gly
 740 745 750

Glu Lys Val Lys Thr Leu Asp Val Thr Ser Glu Thr Asn Trp Lys Tyr
 755 760 765

Glu Phe Lys Asp Leu Pro Lys Tyr Asp Glu Gly Lys Lys Ile Glu Tyr
 770 775 780

Thr Val Thr Glu Asp His Val Lys Asp Tyr Thr Thr Asp Ile Asn Gly
 785 790 795 800

Thr Thr Ile Thr Asn Lys Tyr Thr Pro Gly Glu Thr Ser Ala Thr Val
 805 810 815

Thr Lys Asn Trp Asp Asp Asn Asn Asn Gln Asp Gly Lys Arg Pro Thr
 820 825 830

Glu Ile Lys Val Glu Leu Tyr Gln Asp Gly Lys Ala Thr Gly Lys Thr
 835 840 845

Ala Ile Leu Asn Glu Ser Asn Asn Trp Thr His Thr Trp Thr Gly Leu
 850 855 860

Asp Glu Lys Ala Lys Gly Gln Gln Val Lys Tyr Thr Val Glu Glu Leu
865 870 875 880

Thr Lys Val Lys Gly Tyr Thr Thr His Val Asp Asn Asn Asp Met Gly
885 890 895

Asn Leu Ile Val Thr Asn Lys Tyr Thr Pro Glu Thr Thr Ser Ile Ser
900 905 910

Gly Glu Lys Val Trp Asp Asp Lys Asp Asn Gln Asp Gly Lys Arg Pro
915 920 925

Glu Lys Val Ser Val Asn Leu Leu Ala Asn Gly Glu Lys Val Lys Thr
930 935 940

Leu Asp Val Thr Ser Glu Thr Asn Trp Lys Tyr Glu Phe Lys Asp Leu
945 950 955 960

Pro Lys Tyr Asp Glu Gly Lys Lys Ile Glu Tyr Thr Val Thr Glu Asp
965 970 975

His Val Lys Asp Tyr Thr Thr Asp Ile Asn Gly Thr Thr Ile Thr Asn
980 985 990

Lys Tyr Thr Pro Gly Glu Thr Ser Ala Thr Val Thr Lys Asn Trp Asp
995 1000 1005

Asp Asn Asn Asn Gln Asp Gly Lys Arg Pro Thr Glu Ile Lys Val
1010 1015 1020

Glu Leu Tyr Gln Asp Gly Lys Ala Thr Gly Lys Thr Ala Ile Leu
1025 1030 1035

Asn Glu Ser Asn Asn Trp Thr His Thr Trp Thr Gly Leu Asp Glu
1040 1045 1050

Lys Ala Lys Gly Gln Gln Val Lys Tyr Thr Val Asp Glu Leu Thr
1055 1060 1065

Lys Val Asn Gly Tyr Thr Thr His Val Asp Asn Asn Asp Met Gly
1070 1075 1080

Asn Leu Ile Val Thr Asn Lys Tyr Thr Pro Lys Lys Pro Asn Lys
 1085 1090 1095

Pro Ile Tyr Pro Glu Lys Pro Lys Asp Lys Thr Pro Pro Thr Lys
 1100 1105 1110

Pro Asp His Ser Asn Lys Val Lys Pro Thr Pro Pro Asp Lys Pro
 1115 1120 1125

Ser Lys Val Asp Lys Asp Asp Gln Pro Lys Asp Asn Lys Thr Lys
 1130 1135 1140

Pro Glu Asn Pro Leu Lys Glu Leu Pro Lys Thr Gly Met Lys Ile
 1145 1150 1155

Ile Thr Ser Trp Ile Thr Trp Val Phe Ile Gly Ile Leu Gly Leu
 1160 1165 1170

Tyr Leu Ile Leu Arg Lys Arg Phe Asn Ser
 1175 1180

<210> 46
 <211> 9
 <212> PRT
 <213> Homo sapiens

<220>
 <221> MISC_FEATURE
 <222> (4)..(4)
 <223> Xaa can be any amino acid

<220>
 <221> MISC_FEATURE
 <222> (6)..(7)
 <223> Xaa can be any amino acid

<400> 46

Ile Leu Val Xaa Tyr Xaa Xaa Leu Val
 1 5

<210> 47
 <211> 209
 <212> PRT
 <213> Homo sapiens

<400> 47

Met Ser Pro His Pro Thr Ala Leu Leu Gly Leu Val Leu Cys Leu Ala
 1 5 10 15

Gln Thr Ile His Thr Gln Glu Glu Asp Leu Pro Arg Pro Ser Ile Ser
 20 25 30

Ala Glu Pro Gly Thr Val Ile Pro Leu Gly Ser His Val Thr Phe Val
 35 40 45

Cys Arg Gly Pro Val Gly Val Gln Thr Phe Arg Leu Glu Arg Glu Ser
 50 55 60

Arg Ser Thr Tyr Asn Asp Thr Glu Asp Val Ser Gln Ala Ser Pro Ser
 65 70 75 80

Glu Ser Glu Ala Arg Phe Arg Ile Asp Ser Val Ser Glu Gly Asn Ala
 85 90 95

Gly Pro Tyr Arg Cys Ile Tyr Tyr Lys Pro Pro Lys Trp Ser Glu Gln
 100 105 110

Ser Asp Tyr Leu Glu Leu Leu Val Lys Glu Thr Ser Gly Gly Pro Asp
 115 120 125

Ser Pro Asp Thr Glu Pro Gly Ser Ser Ala Gly Pro Thr Gln Arg Pro
 130 135 140

Ser Asp Asn Ser His Asn Glu His Ala Pro Ala Ser Gln Gly Leu Lys
 145 150 155 160

Ala Glu His Leu Tyr Ile Leu Ile Gly Val Ser Val Val Phe Leu Phe
 165 170 175

Cys Leu Leu Leu Leu Val Leu Phe Cys Leu His Arg Gln Asn Gln Ile
 180 185 190

Lys Gln Gly Pro Pro Arg Ser Lys Asp Glu Glu Gln Lys Pro Gln Gln
 195 200 205

Arg

<210> 48
 <211> 410
 <212> PRT
 <213> Homo sapiens

<400> 48

Met Ser Leu Met Val Val Ser Met Ala Cys Val Gly Phe Phe Leu Leu
 1 5 10 15

Glu Gly Pro Trp Pro His Val Gly Gly Gln Asp Lys Pro Phe Leu Ser
 20 25 30

Ala Trp Pro Gly Thr Val Val Ser Glu Gly Gln His Val Thr Leu Gln
 35 40 45

Cys Arg Ser His Leu Gly Phe Asn Glu Phe Ser Leu Ser Lys Glu Asp
 50 55 60

Gly Met Pro Val Pro Glu Leu Tyr Asn Arg Ile Phe Arg Asn Ser Phe
 65 70 75 80

Leu Met Gly Pro Val Thr Pro Ala His Ala Gly Thr Tyr Arg Cys Cys
 85 90 95

Ser Ser His Pro His Ser Pro Thr Gly Trp Ser Ala Pro Ser Asn Pro
 100 105 110

Val Val Ile Met Val Thr Gly Val His Arg Lys Pro Ser Leu Leu Ala
 115 120 125

His Pro Gly Pro Leu Val Lys Ser Gly Glu Thr Val Ile Leu Gln Cys
 130 135 140

Trp Ser Asp Val Arg Phe Glu Arg Phe Leu Leu His Arg Glu Gly Ile
 145 150 155 160

Thr Glu Asp Pro Leu Arg Leu Val Gly Gln Leu His Asp Ala Gly Ser
 165 170 175

Gln Val Asn Tyr Ser Met Gly Pro Met Thr Pro Ala Leu Ala Gly Thr
 180 185 190

[illegible]

<400> 49

Lys Ser Ser Gly Ile Asn Thr Ala Ser Ser Ala Ala Ser Lys Glu Arg
20 25 30

Ser Leu Leu Ile Phe Phe Leu Leu Leu Ala Ile Ser Phe Phe Ile Ala
50 55 60

Thr Lys Glu Leu Val His Thr Thr Leu Glu Cys Val Lys Lys Asn Met
85 90 95

Phe Ser Ser Asn Cys Tyr Phe Ile Ser Thr Glu Ser Ala Ser Trp Gln
115 120 125

Asp Ser Glu Lys Asp Cys Ala Arg Met Glu Ala His Leu Leu Val Ile
130 135 140

Asn Thr Gln Glu Glu Gln Asp Phe Ile Phe Gln Asn Leu Gln Glu Glu
145 150 155 160

Ser Ala Tyr Phe Val Gly Leu Ser Asp Pro Glu Gly Gln Arg His Trp
165 170 175

Gln Trp Val Asp Gln Thr Pro Tyr Asn Glu Ser Ser Thr Phe Trp His
180 185 190

Pro Arg Glu Pro Ser Asp Pro Asn Glu Arg Cys Val Val Leu Asn Phe
195 200 205

Arg Lys Ser Pro Lys Arg Trp Gly Trp Asn Asp Val Asn Cys Leu Gly
210 215 220

Pro Gln Arg Ser Val Cys Glu Met Met Lys Ile His Leu
225 230 235

<210> 50
<211> 447
<212> PRT
<213> Homo sapiens

<400> 50

Met Ile Pro Thr Phe Thr Ala Leu Leu Cys Leu Gly Leu Ser Leu Gly
1 5 10 15

Pro Arg Thr His Met Gln Ala Gly Pro Leu Pro Lys Pro Thr Leu Trp
20 25 30

Ala Glu Pro Gly Ser Val Ile Ser Trp Gly Asn Ser Val Thr Ile Trp
35 40 45

Cys Gln Gly Thr Leu Glu Ala Arg Glu Tyr Arg Leu Asp Lys Glu Glu
50 55 60

Ser Pro Ala Pro Trp Asp Arg Gln Asn Pro Leu Glu Pro Lys Asn Lys
65 70 75 80

Ala Arg Phe Ser Ile Pro Ser Met Thr Glu Asp Tyr Ala Gly Arg Tyr
85 90 95

Arg Cys Tyr Tyr Arg Ser Pro Val Gly Trp Ser Gln Pro Ser Asp Pro
100 105 110

Leu Glu Leu Val Met Thr Gly Ala Tyr Ser Lys Pro Thr Leu Ser Ala
115 120 125

Leu Pro Ser Pro Leu Val Thr Ser Gly Lys Ser Val Thr Leu Leu Cys
130 135 140

Gln Ser Arg Ser Pro Met Asp Thr Phe Leu Leu Ile Lys Glu Arg Ala
 145 150 155 160

Ala His Pro Leu Leu His Leu Arg Ser Glu His Gly Ala Gln Gln His
 165 170 175

Gln Ala Glu Phe Pro Met Ser Pro Val Thr Ser Val His Gly Gly Thr
 180 185 190

Tyr Arg Cys Phe Ser Ser His Gly Phe Ser His Tyr Leu Leu Ser His
 195 200 205

Pro Ser Asp Pro Leu Glu Leu Ile Val Ser Gly Ser Leu Glu Gly Pro
 210 215 220

Arg Pro Ser Pro Thr Arg Ser Val Ser Thr Ala Ala Gly Pro Glu Asp
 225 230 235 240

Gln Pro Leu Met Pro Thr Gly Ser Val Pro His Ser Gly Leu Arg Arg
 245 250 255

His Trp Glu Val Leu Ile Gly Val Leu Val Val Ser Ile Leu Leu Leu
 260 265 270

Ser Leu Leu Leu Phe Leu Leu Leu Gln His Trp Arg Gln Gly Lys His
 275 280 285

Arg Thr Leu Ala Gln Arg Gln Ala Asp Phe Gln Arg Pro Pro Gly Ala
 290 295 300

Ala Glu Pro Glu Pro Lys Asp Gly Gly Leu Gln Arg Arg Ser Ser Pro
 305 310 315 320

Ala Ala Asp Val Gln Gly Glu Asn Phe Cys Ala Ala Val Lys Asn Thr
 325 330 335

Gln Pro Glu Asp Gly Val Glu Met Asp Thr Arg Ser Pro His Asp Glu
 340 345 350

Asp Pro Gln Ala Val Thr Tyr Ala Lys Val Lys His Ser Arg Pro Arg
 355 360 365

[illegible]

Tyr Asn Phe Arg Phe Glu Ile Ser Glu Val Asn Arg Trp Ser Asp Val
 115 120 125

Lys Gly Thr Leu Val Thr Val Thr Glu Glu Pro Arg Val Pro Thr Ile
 130 135 140

Ala Ser Pro Val Glu Leu Leu Glu Gly Thr Glu Val Asp Phe Asn Cys
 145 150 155 160

Ser Thr Pro Tyr Val Cys Leu Gln Glu Gln Val Arg Leu Gln Trp Gln
 165 170 175

Gly Gln Asp Pro Ala Arg Ser Val Thr Phe Asn Ser Gln Lys Phe Glu
 180 185 190

Pro Thr Gly Val Gly His Leu Glu Thr Leu His Met Ala Met Ser Trp
 195 200 205

Gln Asp His Gly Arg Ile Leu Arg Cys Gln Leu Ser Val Ala Asn His
 210 215 220

Arg Ala Gln Ser Glu Ile His Leu Gln Val Lys Tyr Ala Pro Lys Gly
 225 230 235 240

Val Lys Ile Leu Leu Ser Pro Ser Gly Arg Asn Ile Leu Pro Gly Glu
 245 250 255

Leu Val Thr Leu Thr Cys Gln Val Asn Ser Ser Tyr Pro Ala Val Ser
 260 265 270

Ser Ile Lys Trp Leu Lys Asp Gly Val Arg Leu Gln Thr Lys Thr Gly
 275 280 285

Val Leu His Leu Pro Gln Ala Ala Trp Ser Asp Ala Gly Val Tyr Thr
 290 295 300

Cys Gln Ala Glu Asn Gly Val Gly Ser Leu Val Ser Pro Pro Ile Ser
 305 310 315 320

Leu His Ile Phe Met Ala Glu Val Gln Val Ser Pro Ala Gly Pro Ile
 325 330 335

Leu Leu Pro Ala Ala Ser Ser Thr Asp Ala Gly Ser Tyr His Cys Arg
565 570 575

Thr Val Leu Tyr Pro Pro Arg Gln Pro Thr Phe Thr Thr Arg Leu Asp
595 600 605

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Val | Asp | Ser | Asp | Pro | Pro | Ala | Arg | Leu | Gln | Leu | Leu | His | Lys | Asp |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 |

Gly Gly Cys Ser Pro Arg Met Lys Val Thr Lys Ala Pro Asn Leu Leu
660 665 670

Cys Glu Ala Ser Asn Ala Leu Gly Asn Ala Ser Thr Ser Ala Thr Phe
690 695 700

Glu Gly Thr Glu Ala Asn Leu Thr Cys Asn Val Ser Arg Glu Ala Ala
725 730 735

Gln Gly Pro Leu Glu Thr Val Thr Leu Leu Pro Val Ala Arg Thr Asp
755 760 765

| | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Ser | Asp | Pro | Pro | Ala | Gln | Leu | Arg | Leu | Leu | His | Gly | Asp | Arg | Leu |
| 1010 | | | | | | 1015 | | | | | 1020 | | | |
| Val | Ala | Ser | Thr | Leu | Gln | Gly | Val | Gly | Gly | Pro | Glu | Gly | Ser | Ser |
| 1025 | | | | | | 1030 | | | | | 1035 | | | |
| Pro | Arg | Leu | His | Val | Ala | Val | Ala | Pro | Asn | Thr | Leu | Arg | Leu | Glu |
| 1040 | | | | | | 1045 | | | | | 1050 | | | |
| Ile | His | Gly | Ala | Met | Leu | Glu | Asp | Glu | Gly | Val | Tyr | Ile | Cys | Glu |
| 1055 | | | | | | 1060 | | | | | 1065 | | | |
| Ala | Ser | Asn | Thr | Leu | Gly | Gln | Ala | Ser | Ala | Ser | Ala | Asp | Phe | Asp |
| 1070 | | | | | | 1075 | | | | | 1080 | | | |
| Ala | Gln | Ala | Val | Asn | Val | Gln | Val | Trp | Pro | Gly | Ala | Thr | Val | Arg |
| 1085 | | | | | | 1090 | | | | | 1095 | | | |
| Glu | Gly | Gln | Leu | Val | Asn | Leu | Thr | Cys | Leu | Val | Trp | Thr | Thr | His |
| 1100 | | | | | | 1105 | | | | | 1110 | | | |
| Pro | Ala | Gln | Leu | Thr | Tyr | Thr | Trp | Tyr | Gln | Asp | Gly | Gln | Gln | Arg |
| 1115 | | | | | | 1120 | | | | | 1125 | | | |
| Leu | Asp | Ala | His | Ser | Ile | Pro | Leu | Pro | Asn | Val | Thr | Val | Arg | Asp |
| 1130 | | | | | | 1135 | | | | | 1140 | | | |
| Ala | Thr | Ser | Tyr | Arg | Cys | Gly | Val | Gly | Pro | Pro | Gly | Arg | Ala | Pro |
| 1145 | | | | | | 1150 | | | | | 1155 | | | |
| Arg | Leu | Ser | Arg | Pro | Ile | Thr | Leu | Asp | Val | Leu | Tyr | Ala | Pro | Arg |
| 1160 | | | | | | 1165 | | | | | 1170 | | | |
| Asn | Leu | Arg | Leu | Thr | Tyr | Leu | Leu | Glu | Ser | His | Gly | Gly | Gln | Leu |
| 1175 | | | | | | 1180 | | | | | 1185 | | | |
| Ala | Leu | Val | Leu | Cys | Thr | Val | Asp | Ser | Arg | Pro | Pro | Ala | Gln | Leu |
| 1190 | | | | | | 1195 | | | | | 1200 | | | |
| Ala | Leu | Ser | His | Ala | Gly | Arg | Leu | Leu | Ala | Ser | Ser | Thr | Ala | Ala |
| 1205 | | | | | | 1210 | | | | | 1215 | | | |

[illegible]

| | | | |
|---------|---------------------|---------------------|-------------|
| Ser Val | Pro Asn Thr Leu Arg | Leu Glu Leu Arg Gly | Pro Gln Pro |
| 1220 | 1225 | 1230 | |
| Arg Asp | Glu Gly Phe Tyr Ser | Cys Ser Ala Arg Ser | Pro Leu Gly |
| 1235 | 1240 | 1245 | |
| Gln Ala | Asn Thr Ser Leu Glu | Leu Arg Leu Glu Gly | Val Arg Val |
| 1250 | 1255 | 1260 | |
| Ile Leu | Ala Pro Glu Ala Ala | Val Pro Glu Gly Ala | Pro Ile Thr |
| 1265 | 1270 | 1275 | |
| Val Thr | Cys Ala Asp Pro Ala | Ala His Ala Pro Thr | Leu Tyr Thr |
| 1280 | 1285 | 1290 | |
| Trp Tyr | His Asn Gly Arg Trp | Leu Gln Glu Gly Pro | Ala Ala Ser |
| 1295 | 1300 | 1305 | |
| Leu Ser | Phe Leu Val Ala Thr | Arg Ala His Ala Gly | Ala Tyr Ser |
| 1310 | 1315 | 1320 | |
| Cys Gln | Ala Gln Asp Ala Gln | Gly Thr Arg Ser Ser | Arg Pro Ala |
| 1325 | 1330 | 1335 | |
| Ala Leu | Gln Val Leu Tyr Ala | Pro Gln Asp Ala Val | Leu Ser Ser |
| 1340 | 1345 | 1350 | |
| Phe Arg | Asp Ser Arg Ala Arg | Ser Met Ala Val Ile | Gln Cys Thr |
| 1355 | 1360 | 1365 | |
| Val Asp | Ser Glu Pro Pro Ala | Glu Leu Ala Leu Ser | His Asp Gly |
| 1370 | 1375 | 1380 | |
| Lys Val | Leu Ala Thr Ser Ser | Gly Val His Ser Leu | Ala Ser Gly |
| 1385 | 1390 | 1395 | |
| Thr Gly | His Val Gln Val Ala | Arg Asn Ala Leu Arg | Leu Gln Val |
| 1400 | 1405 | 1410 | |
| Gln Asp | Val Pro Ala Gly Asp | Asp Thr Tyr Val Cys | Thr Ala Gln |
| 1415 | 1420 | 1425 | |

| | | | |
|---------|---------------------|---------------------|-------------|
| Asn Leu | Leu Gly Ser Ile Ser | Thr Ile Gly Arg Leu | Gln Val Glu |
| 1430 | 1435 | 1440 | |
| Gly Ala | Arg Val Val Ala Glu | Pro Gly Leu Asp Val | Pro Glu Gly |
| 1445 | 1450 | 1455 | |
| Ala Ala | Leu Asn Leu Ser Cys | Arg Leu Leu Gly Gly | Pro Gly Pro |
| 1460 | 1465 | 1470 | |
| Val Gly | Asn Ser Thr Phe Ala | Trp Phe Trp Asn Asp | Arg Arg Leu |
| 1475 | 1480 | 1485 | |
| His Ala | Glu Pro Val Pro Thr | Leu Ala Phe Thr His | Val Ala Arg |
| 1490 | 1495 | 1500 | |
| Ala Gln | Ala Gly Met Tyr His | Cys Leu Ala Glu Leu | Pro Thr Gly |
| 1505 | 1510 | 1515 | |
| Ala Ala | Ala Ser Ala Pro Val | Met Leu Arg Val Leu | Tyr Pro Pro |
| 1520 | 1525 | 1530 | |
| Lys Thr | Pro Thr Met Met Val | Phe Val Glu Pro Glu | Gly Gly Leu |
| 1535 | 1540 | 1545 | |
| Arg Gly | Ile Leu Asp Cys Arg | Val Asp Ser Glu Pro | Leu Ala Ser |
| 1550 | 1555 | 1560 | |
| Leu Thr | Leu His Leu Gly Ser | Arg Leu Val Ala Ser | Ser Gln Pro |
| 1565 | 1570 | 1575 | |
| Gln Gly | Ala Pro Ala Glu Pro | His Ile His Val Leu | Ala Ser Pro |
| 1580 | 1585 | 1590 | |
| Asn Ala | Leu Arg Val Asp Ile | Glu Ala Leu Arg Pro | Ser Asp Gln |
| 1595 | 1600 | 1605 | |
| Gly Glu | Tyr Ile Cys Ser Ala | Ser Asn Val Leu Gly | Ser Ala Ser |
| 1610 | 1615 | 1620 | |
| Thr Ser | Thr Tyr Phe Gly Val | Arg Ala Leu His Arg | Leu His Gln |
| 1625 | 1630 | 1635 | |

Phe Gln Gln Leu Leu Trp Val Leu Gly Leu Leu Val Gly Leu Leu
 1640 1645 1650

Leu Leu Leu Leu Gly Leu Gly Ala Cys Tyr Thr Trp Arg Arg Arg
 1655 1660 1665

Arg Val Cys Lys Gln Ser Met Gly Glu Asn Ser Val Glu Met Ala
 1670 1675 1680

Phe Gln Lys Glu Thr Thr Gln Leu Ile Asp Pro Asp Ala Ala Thr
 1685 1690 1695

Cys Glu Thr Ser Thr Cys Ala Pro Pro Leu Gly
 1700 1705

<210> 52
 <211> 847
 <212> PRT
 <213> Homo sapiens

<400> 52

Met His Leu Leu Gly Pro Trp Leu Leu Leu Leu Val Leu Glu Tyr Leu
 1 5 10 15

Ala Phe Ser Asp Ser Ser Lys Trp Val Phe Glu His Pro Glu Thr Leu
 20 25 30

Tyr Ala Trp Glu Gly Ala Cys Val Trp Ile Pro Cys Thr Tyr Arg Ala
 35 40 45

Leu Asp Gly Asp Leu Glu Ser Phe Ile Leu Phe His Asn Pro Glu Tyr
 50 55 60

Asn Lys Asn Thr Ser Lys Phe Asp Gly Thr Arg Leu Tyr Glu Ser Thr
 65 70 75 80

Lys Asp Gly Lys Val Pro Ser Glu Gln Lys Arg Val Gln Phe Leu Gly
 85 90 95

Asp Lys Asn Lys Asn Cys Thr Leu Ser Ile His Pro Val His Leu Asn
 100 105 110

Asp Ser Gly Gln Leu Gly Leu Arg Met Glu Ser Lys Thr Glu Lys Trp
115 120 125

Met Glu Arg Ile His Leu Asn Val Ser Glu Arg Pro Phe Pro Pro His
130 135 140

Ile Gln Leu Pro Pro Glu Ile Gln Glu Ser Gln Glu Val Thr Leu Thr
145 150 155 160

Cys Leu Leu Asn Phe Ser Cys Tyr Gly Tyr Pro Ile Gln Leu Gln Trp
165 170 175

Leu Leu Glu Gly Val Pro Met Arg Gln Ala Ala Val Thr Ser Thr Ser
180 185 190

Leu Thr Ile Lys Ser Val Phe Thr Arg Ser Glu Leu Lys Phe Ser Pro
195 200 205

Gln Trp Ser His His Gly Lys Ile Val Thr Cys Gln Leu Gln Asp Ala
210 215 220

Asp Gly Lys Phe Leu Ser Asn Asp Thr Val Gln Leu Asn Val Lys His
225 230 235 240

Thr Pro Lys Leu Glu Ile Lys Val Thr Pro Ser Asp Ala Ile Val Arg
245 250 255

Glu Gly Asp Ser Val Thr Met Thr Cys Glu Val Ser Ser Ser Asn Pro
260 265 270

Glu Tyr Thr Thr Val Ser Trp Leu Lys Asp Gly Thr Ser Leu Lys Lys
275 280 285

Gln Asn Thr Phe Thr Leu Asn Leu Arg Glu Val Thr Lys Asp Gln Ser
290 295 300

Gly Lys Tyr Cys Cys Gln Val Ser Asn Asp Val Gly Pro Gly Arg Ser
305 310 315 320

Glu Glu Val Phe Leu Gln Val Gln Tyr Ala Pro Glu Pro Ser Thr Val
325 330 335

PROBATION DEPARTMENT

Arg Pro Pro Arg Thr Cys Asp Asp Thr Val Thr Tyr Ser Ala Leu His
 785 790 795 800

Lys Arg Gln Val Gly Asp Tyr Glu Asn Val Ile Pro Asp Phe Pro Glu
 805 810 815

Asp Glu Gly Ile His Tyr Ser Glu Leu Ile Gln Phe Gly Val Gly Glu
 820 825 830

Arg Pro Gln Ala Gln Glu Asn Val Asp Tyr Val Ile Leu Lys His
 835 840 845

<210> 53
 <211> 32
 <212> PRT
 <213> Homo sapiens

<220>
 <221> MISC_FEATURE
 <222> (2)..(2)
 <223> Xaa is Ile or Leu

<220>
 <221> MISC_FEATURE
 <222> (3)..(3)
 <223> Xaa can be any amino acid

<220>
 <221> MISC_FEATURE
 <222> (6)..(6)
 <223> Xaa can be any amino acid

<220>
 <221> MISC_FEATURE
 <222> (8)..(25)
 <223> Xaa can be any amino acid

<220>
 <221> MISC_FEATURE
 <222> (26)..(26)
 <223> Xaa is Thr or Asn

<220>
 <221> MISC_FEATURE
 <222> (31)..(31)
 <223> Xaa is Ile or Val

<220>
 <221> MISC_FEATURE
 <222> (32)..(32)
 <223> Xaa is Lys or Arg

<400> 53

Glu Xaa Xaa Tyr Ala Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu Tyr Ser Glu Xaa Xaa
20 25 30

<210> 54

<211> 6

<212> PRT

<213> Homo sapiens

<220>

<221> MISC_FEATURE

<222> (1)..(1)

<223> Xaa is Thr or Asn

<220>

<221> MISC_FEATURE

<222> (6)..(6)

<223> Xaa is Ile or Val

<400> 54

Xaa Glu Tyr Ser Glu Xaa
1 5

<210> 55

<211> 442

<212> PRT

<213> Homo sapiens

<400> 55

Met Leu Pro Leu Leu Leu Pro Leu Leu Trp Ala Gly Ala Leu Ala Gln
1 5 10 15

Glu Arg Arg Phe Gln Leu Glu Gly Pro Glu Ser Leu Thr Val Gln Glu
20 25 30

Gly Leu Cys Val Leu Val Pro Cys Arg Leu Pro Thr Thr Leu Pro Ala
35 40 45

Ser Tyr Tyr Gly Tyr Gly Tyr Trp Phe Leu Glu Gly Ala Asp Val Pro
50 55 60

Val Ala Thr Asn Asp Pro Asp Glu Glu Val Gln Glu Glu Thr Arg Gly
65 70 75 80

Arg Phe His Leu Leu Trp Asp Pro Arg Arg Lys Asn Cys Ser Leu Ser
85 90 95

Ile Arg Asp Ala Arg Arg Arg Asp Asn Ala Ala Tyr Phe Phe Arg Leu
100 105 110

Lys Ser Lys Trp Met Lys Tyr Gly Tyr Thr Ser Ser Lys Leu Ser Val
115 120 125

Arg Val Met Ala Leu Thr His Arg Pro Asn Ile Ser Ile Pro Gly Thr
130 135 140

Leu Glu Ser Gly His Pro Ser Asn Leu Thr Cys Ser Val Pro Trp Val
145 150 155 160

Cys Glu Gln Gly Thr Pro Pro Ile Phe Ser Trp Met Ser Ala Ala Pro
165 170 175

Thr Ser Leu Gly Pro Arg Thr Thr Gln Ser Ser Val Leu Thr Ile Thr
180 185 190

Pro Arg Pro Gln Asp His Ser Thr Asn Leu Thr Cys Gln Val Thr Phe
195 200 205

Pro Gly Ala Gly Val Thr Met Glu Arg Thr Ile Gln Leu Asn Val Ser
210 215 220

Tyr Ala Pro Gln Lys Val Ala Ile Ser Ile Phe Gln Gly Asn Ser Ala
225 230 235 240

Ala Phe Lys Ile Leu Gln Asn Thr Ser Ser Leu Pro Val Leu Glu Gly
245 250 255

Gln Ala Leu Arg Leu Leu Cys Asp Ala Asp Gly Asn Pro Pro Ala His
260 265 270

Leu Ser Trp Phe Gln Gly Phe Pro Ala Leu Asn Ala Thr Pro Ile Ser
275 280 285

Asn Thr Gly Val Leu Glu Leu Pro Gln Val Gly Ser Ala Glu Glu Gly
290 295 300

Asp Phe Thr Cys Arg Ala Gln His Pro Leu Gly Ser Leu Gln Ile Ser
305 310 315 320

Leu Ser Leu Phe Val His Trp Lys Pro Glu Gly Arg Ala Gly Gly Val
325 330 335

Leu Gly Ala Val Trp Gly Ala Ser Ile Thr Thr Leu Val Phe Leu Cys
340 345 350

Val Cys Phe Ile Phe Arg Val Lys Thr Arg Arg Lys Lys Ala Ala Gln
355 360 365

Pro Val Gln Asn Thr Asp Asp Val Asn Pro Val Met Val Ser Gly Ser
370 375 380

Arg Gly His Gln His Gln Phe Gln Thr Gly Ile Val Ser Asp His Pro
385 390 395 400

Ala Glu Ala Gly Pro Ile Ser Glu Asp Glu Gln Glu Leu His Tyr Ala
405 410 415

Val Leu His Phe His Lys Val Gln Pro Gln Glu Pro Lys Val Thr Asp
420 425 430

Thr Glu Tyr Ser Glu Ile Lys Ile His Lys
435 440

<210> 56
<211> 626
<212> PRT
<213> Homo sapiens

<400> 56

Met Ile Phe Leu Thr Ala Leu Pro Leu Phe Trp Ile Met Ile Ser Ala
1 5 10 15

Ser Arg Gly Gly His Trp Gly Ala Trp Met Pro Ser Ser Ile Ser Ala
20 25 30

$\frac{d}{dt} \left(\frac{\partial L}{\partial \dot{x}} \right) = \frac{\partial L}{\partial x}$

Tyr Pro Lys Asn Tyr Pro Pro Val Val Phe Lys Ser Arg Thr Gln Val
65 70 75 80

Leu Arg Asn Cys Thr Leu Leu Leu Ser Asn Val Ser Pro Glu Leu Gly
100 105 110

Phe Ser Glu His Ser Val Leu Asp Ile Val Asn Thr Pro Asn Ile Val
130 135 140

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Pro | Asp | Asn | Cys | Pro | Glu | Leu | Arg | Pro | Glu | Leu | Ser | Trp | Leu | Gly |
| | | | | 165 | | | | | 170 | | | | | 175 | |

Glu Gly Thr Trp Val Gln Val Ser Leu Leu His Phe Val Pro Thr Arg
195 200 205

Thr Leu Gln Phe Glu Gly Tyr Ala Ser Met Asp Val Lys Tyr Pro Pro
225 230 235 240

94

Val Ser Leu Leu Cys Gly Ala Asp Ser Asn Pro Pro Pro Leu Leu Thr
 260 265 270

Trp Met Arg Asp Gly Thr Val Leu Arg Glu Ala Val Ala Glu Ser Leu
 275 280 285

Leu Leu Glu Leu Glu Glu Val Thr Pro Ala Glu Asp Gly Val Tyr Ala
 290 295 300

Cys Leu Ala Glu Asn Ala Tyr Gly Gln Asp Asn Arg Thr Val Gly Leu
 305 310 315 320

Ser Val Met Tyr Ala Pro Trp Lys Pro Thr Val Asn Gly Thr Met Val
 325 330 335

Ala Val Glu Gly Glu Thr Val Ser Ile Leu Cys Ser Thr Gln Ser Asn
 340 345 350

Pro Asp Pro Ile Leu Thr Ile Phe Lys Glu Lys Gln Ile Leu Ser Thr
 355 360 365

Val Ile Tyr Glu Ser Glu Leu Gln Leu Glu Leu Pro Ala Val Ser Pro
 370 375 380

Glu Asp Asp Gly Glu Tyr Trp Cys Val Ala Glu Asn Gln Tyr Gly Gln
 385 390 395 400

Arg Ala Thr Ala Phe Asn Leu Ser Val Glu Phe Ala Pro Val Leu Leu
 405 410 415

Leu Glu Ser His Cys Ala Ala Ala Arg Asp Thr Val Gln Cys Leu Cys
 420 425 430

Val Val Lys Ser Asn Pro Glu Pro Ser Val Ala Phe Glu Leu Pro Ser
 435 440 445

Arg Asn Val Thr Val Asn Glu Ser Glu Arg Glu Phe Val Tyr Ser Glu
 450 455 460

Arg Ser Gly Leu Val Leu Thr Ser Ile Leu Thr Leu Arg Gly Gln Ala
 465 470 475 480

Glu Gly Leu Cys Val Leu Val Pro Cys Ser Phe Ser Tyr Pro Trp Arg
35 40 45

Ser Trp Tyr Ser Ser Pro Pro Leu Tyr Val Tyr Trp Phe Arg Asp Gly
50 55 60

Glu Ile Pro Tyr Tyr Ala Glu Val Val Ala Thr Asn Asn Pro Asp Arg
65 70 75 80

Arg Val Lys Pro Glu Thr Gln Gly Arg Phe Arg Leu Leu Gly Asp Val
85 90 95

Gln Lys Lys Asn Cys Ser Leu Ser Ile Gly Asp Ala Arg Met Glu Asp
100 105 110

Thr Gly Ser Tyr Phe Phe Arg Val Glu Arg Gly Arg Asp Val Lys Tyr
115 120 125

Ser Tyr Gln Gln Asn Lys Leu Asn Leu Glu Val Thr Ala Leu Ile Glu
130 135 140

Lys Pro Asp Ile His Phe Leu Glu Pro Leu Glu Ser Gly Arg Pro Thr
145 150 155 160

Arg Leu Ser Cys Ser Leu Pro Gly Ser Cys Glu Ala Gly Pro Pro Leu
165 170 175

Thr Phe Ser Trp Thr Gly Asn Ala Leu Ser Pro Leu Asp Pro Glu Thr
180 185 190

Thr Arg Ser Ser Glu Leu Thr Leu Thr Pro Arg Pro Glu Asp His Gly
195 200 205

Thr Asn Leu Thr Cys Gln Met Lys Arg Gln Gly Ala Gln Val Thr Thr
210 215 220

Glu Arg Thr Val Gln Leu Asn Val Ser Tyr Ala Pro Gln Thr Ile Thr
225 230 235 240

Ile Phe Arg Asn Gly Ile Ala Leu Glu Ile Leu Gln Asn Thr Ser Tyr
245 250 255

Leu Pro Val Leu Glu Gly Gln Ala Leu Arg Leu Leu Cys Asp Ala Pro
 260 265 270

Ser Asn Pro Pro Ala His Leu Ser Trp Phe Gln Gly Ser Pro Ala Leu
 275 280 285

Asn Ala Thr Pro Ile Ser Asn Thr Gly Ile Leu Glu Leu Arg Arg Val
 290 295 300

Arg Ser Ala Glu Glu Gly Gly Phe Thr Cys Arg Ala Gln His Pro Leu
 305 310 315 320

Gly Phe Leu Gln Ile Phe Leu Asn Leu Ser Val Tyr Ser Leu Pro Gln
 325 330 335

Leu Leu Gly Pro Ser Cys Ser Trp Glu Ala Glu Gly Leu His Cys Arg
 340 345 350

Cys Ser Phe Arg Ala Arg Pro Ala Pro Ser Leu Cys Trp Arg Leu Glu
 355 360 365

Glu Lys Pro Leu Glu Gly Asn Ser Ser Gln Gly Ser Phe Lys Val Asn
 370 375 380

Ser Ser Ser Ala Gly Pro Trp Ala Asn Ser Ser Leu Ile Leu His Gly
 385 390 395 400

Gly Leu Ser Ser Asp Leu Lys Val Ser Cys Lys Ala Trp Asn Ile Tyr
 405 410 415

Gly Ser Gln Ser Gly Ser Val Leu Leu Leu Gln Gly Arg Ser Asn Leu
 420 425 430

Gly Thr Gly Val Val Pro Ala Ala Leu Gly Gly Ala Gly Val Met Ala
 435 440 445

Leu Leu Cys Ile Cys Leu Cys Leu Ile Phe Phe Leu Ile Val Lys Ala
 450 455 460

Arg Arg Lys Gln Ala Ala Gly Arg Pro Glu Lys Met Asp Asp Glu Asp
 465 470 475 480

Pro Ile Met Gly Thr Ile Thr Ser Gly Ser Arg Lys Lys Pro Trp Pro
 485 490 495

Asp Ser Pro Gly Asp Gln Ala Ser Pro Pro Gly Asp Ala Pro Pro Leu
 500 505 510

Glu Glu Gln Lys Glu Leu His Tyr Ala Ser Leu Ser Phe Ser Glu Met
 515 520 525

Lys Ser Arg Glu Pro Lys Asp Gln Glu Ala Pro Ser Thr Thr Glu Tyr
 530 535 540

Ser Glu Ile Lys Thr Ser Lys
 545 550

<210> 58
 <211> 364
 <212> PRT
 <213> Homo sapiens

<400> 58

Met Pro Leu Leu Leu Leu Leu Pro Leu Leu Trp Ala Gly Ala Leu Ala
 1 5 10 15

Met Asp Pro Asn Phe Trp Leu Gln Val Gln Glu Ser Val Thr Val Gln
 20 25 30

Glu Gly Leu Cys Val Leu Val Pro Cys Thr Phe Phe His Pro Ile Pro
 35 40 45

Tyr Tyr Asp Lys Asn Ser Pro Val His Gly Tyr Trp Phe Arg Glu Gly
 50 55 60

Ala Ile Ile Ser Gly Asp Ser Pro Val Ala Thr Asn Lys Leu Asp Gln
 65 70 75 80

Glu Val Gln Glu Glu Thr Gln Gly Arg Phe Arg Leu Leu Gly Asp Pro
 85 90 95

Ser Arg Asn Asn Cys Ser Leu Ser Ile Val Asp Ala Arg Arg Arg Asp
 100 105 110

06-08-98

Asn Gly Ser Tyr Phe Phe Arg Met Glu Arg Gly Ser Thr Lys Tyr Ser
115 120 125

Tyr Lys Ser Pro Gln Leu Ser Val His Val Thr Asp Leu Thr His Arg
130 135 140

Pro Lys Ile Leu Ile Pro Gly Thr Leu Glu Pro Gly His Ser Lys Asn
145 150 155 160

Leu Thr Cys Ser Val Ser Trp Ala Cys Glu Gln Gly Thr Pro Pro Ile
165 170 175

Phe Ser Trp Leu Ser Ala Ala Pro Thr Ser Leu Gly Pro Arg Thr Thr
180 185 190

His Ser Ser Val Leu Ile Ile Thr Pro Arg Pro Gln Asp His Gly Thr
195 200 205

Asn Leu Thr Cys Gln Val Lys Phe Ala Gly Ala Gly Val Thr Thr Glu
210 215 220

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Thr | Ile | Gln | Leu | Asn | Val | Thr | Tyr | Val | Pro | Gln | Asn | Pro | Thr | Thr |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |

Gly Ile Phe Pro Gly Asp Gly Ser Gly Lys Gln Glu Thr Arg Ala Gly
245 250 255

Leu Val His Gly Ala Ile Gly Gly Ala Gly Val Thr Ala Leu Leu Ala
260 265 270

Leu Cys Leu Cys Leu Ile Phe Phe Ile Val Lys Thr His Arg Arg Lys
 , 275 280 285

Ala Ala Arg Thr Ala Val Gly Ser Asn Asp Thr His Pro Thr Thr Gly
290 295 300

Ser Ala Ser Pro Lys His Gln Lys Asn Ser Lys Leu His Gly Pro Thr
305 310 315 320

Glu Thr Ser Ser Cys Ser Gly Ala Ala Pro Thr Val Glu Met Asp Glu
325 330 335

Glu Leu His Tyr Ala Ser Leu Asn Phe His Gly Met Asn Pro Ser Lys
 340 345 350

Asp Thr Ser Thr Glu Tyr Ser Glu Val Arg Thr Gln
 355 360

<210> 59
 <211> 467
 <212> PRT
 <213> Homo sapiens

<400> 59

Met Leu Leu Leu Leu Leu Leu Pro Leu Leu Trp Gly Arg Glu Arg Val
 1 5 10 15

Glu Gly Gln Lys Ser Asn Arg Lys Asp Tyr Ser Leu Thr Met Gln Ser
 20 25 30

Ser Val Thr Val Gln Glu Gly Met Cys Val His Val Arg Cys Ser Phe
 35 40 45

Ser Tyr Pro Val Asp Ser Gln Thr Asp Ser Asp Pro Val His Gly Tyr
 50 55 60

Trp Phe Arg Ala Gly Asn Asp Ile Ser Trp Lys Ala Pro Val Ala Thr
 65 70 75 80

Asn Asn Pro Ala Trp Ala Val Gln Glu Glu Thr Arg Asp Arg Phe His
 85 90 95

Leu Leu Gly Asp Pro Gln Thr Lys Asn Cys Thr Leu Ser Ile Arg Asp
 100 105 110

Ala Arg Met Ser Asp Ala Gly Arg Tyr Phe Phe Arg Met Glu Lys Gly
 115 120 125

Asn Ile Lys Trp Asn Tyr Lys Tyr Asp Gln Leu Ser Val Asn Val Thr
 130 135 140

Ala Leu Thr His Arg Pro Asn Ile Leu Ile Pro Gly Thr Leu Glu Ser
 145 150 155 160

Gly Cys Phe Gln Asn Leu Thr Cys Ser Val Pro Trp Ala Cys Glu Gln
 165 170 175

Gly Thr Pro Pro Met Ile Ser Trp Met Gly Thr Ser Val Ser Pro Leu
 180 185 190

His Pro Ser Thr Thr Arg Ser Ser Val Leu Thr Leu Ile Pro Gln Pro
 195 200 205

Gln His His Gly Thr Ser Leu Thr Cys Gln Val Thr Leu Pro Gly Ala
 210 215 220

Gly Val Thr Thr Asn Arg Thr Ile Gln Leu Asn Val Ser Tyr Pro Pro
 225 230 235 240

Gln Asn Leu Thr Val Thr Val Phe Gln Gly Glu Gly Thr Ala Ser Thr
 245 250 255

Ala Leu Gly Asn Ser Ser Ser Leu Ser Val Leu Glu Gly Gln Ser Leu
 260 265 270

Arg Leu Val Cys Ala Val Asp Ser Asn Pro Pro Ala Arg Leu Ser Trp
 275 280 285

Thr Trp Arg Ser Leu Thr Leu Tyr Pro Ser Gln Pro Ser Asn Pro Leu
 290 295 300

Val Leu Glu Leu Gln Val His Leu Gly Asp Glu Gly Glu Phe Thr Cys
 305 310 315 320

Arg Ala Gln Asn Ser Leu Gly Ser Gln His Val Ser Leu Asn Leu Ser
 325 330 335

Leu Gln Gln Glu Tyr Thr Gly Lys Met Arg Pro Val Ser Gly Val Leu
 340 345 350

Leu Gly Ala Val Gly Gly Ala Gly Ala Thr Ala Leu Val Phe Leu Ser
 355 360 365

Phe Cys Val Ile Phe Ile Val Val Arg Ser Cys Arg Lys Lys Ser Ala
 370 375 380

Arg Pro Ala Ala Asp Val Gly Asp Ile Gly Met Lys Asp Ala Asn Thr
385 390 395 400

Ile Arg Gly Ser Ala Ser Gln Gly Asn Leu Thr Glu Ser Trp Ala Asp
405 410 415

Asp Asn Pro Arg His His Gly Leu Ala Ala His Ser Ser Gly Glu Glu
420 425 430

Arg Glu Ile Gln Tyr Ala Pro Leu Ser Phe His Lys Gly Glu Pro Gln
435 440 445

Asp Leu Ser Gly Gln Glu Ala Thr Asn Asn Glu Tyr Ser Glu Ile Lys
450 455 460

Ile Pro Lys
465

<210> 60
<211> 524
<212> PRT
<213> Homo sapiens

<400> 60

Met Tyr Ala Leu Phe Leu Leu Ala Ser Leu Leu Gly Ala Ala Leu Ala
1 5 10 15

Gly Pro Val Leu Gly Leu Lys Glu Cys Thr Arg Gly Ser Ala Val Trp
20 25 30

Cys Gln Asn Val Lys Thr Ala Ser Asp Cys Gly Ala Val Lys His Cys
35 40 45

Leu Gln Thr Val Trp Asn Lys Pro Thr Val Lys Ser Leu Pro Cys Asp
50 55 60

Ile Cys Lys Asp Val Val Thr Ala Ala Gly Asp Met Leu Lys Asp Asn
65 70 75 80

Ala Thr Glu Glu Glu Ile Leu Val Tyr Leu Glu Lys Thr Cys Asp Trp
85 90 95

Leu Val Lys Glu Val Thr Lys Leu Ile Asp Asn Asn Lys Thr Glu Lys
325 330 335

Glu Ile Leu Asp Ala Phe Asp Lys Met Cys Ser Lys Leu Pro Lys Ser
340 345 350

Leu Ser Glu Glu Cys Gln Glu Val Val Asp Thr Tyr Gly Ser Ser Ile
355 360 365

Leu Ser Ile Leu Leu Glu Glu Val Ser Pro Glu Leu Val Cys Ser Met
370 375 380

Leu His Leu Cys Ser Gly Thr Arg Leu Pro Ala Leu Thr Val His Val
385 390 395 400

Thr Gln Pro Lys Asp Gly Gly Phe Cys Glu Val Cys Lys Lys Leu Val
405 410 415

Gly Tyr Leu Asp Arg Asn Leu Glu Lys Asn Ser Thr Lys Gln Glu Ile
420 425 430

Leu Ala Ala Leu Glu Lys Gly Cys Ser Phe Leu Pro Asp Pro Tyr Gln
435 440 445

Lys Gln Cys Asp Gln Phe Val Ala Glu Tyr Glu Pro Val Leu Ile Glu
450 455 460

Ile Leu Val Glu Val Met Asp Pro Ser Phe Val Cys Leu Lys Ile Gly
465 470 475 480

Ala Cys Pro Ser Ala His Lys Pro Leu Leu Gly Thr Glu Lys Cys Ile
485 490 495

Trp Gly Pro Ser Tyr Trp Cys Gln Asn Thr Glu Thr Ala Ala Gln Cys
500 505 510

Asn Ala Val Glu His Cys Lys Arg His Val Trp Asn
515 520

<210> 61
<211> 527
<212> PRT
<213> Homo sapiens

<400> 61

Met Tyr Ala Leu Phe Leu Leu Ala Ser Leu Leu Gly Ala Ala Leu Ala
1 5 10 15

Gly Pro Val Leu Gly Leu Lys Glu Cys Thr Arg Gly Ser Ala Val Trp
20 25 30

Cys Gln Asn Val Lys Thr Ala Ser Asp Cys Gly Ala Val Lys His Cys
35 40 45

Leu Gln Thr Val Trp Asn Lys Pro Thr Val Lys Ser Leu Pro Cys Asp
50 55 60

Ile Cys Lys Asp Val Val Thr Ala Ala Gly Asp Met Leu Lys Asp Asn
65 70 75 80

Ala Thr Glu Glu Glu Ile Leu Val Tyr Leu Glu Lys Thr Cys Asp Trp
85 90 95

Leu Pro Lys Pro Asn Met Ser Ala Ser Cys Lys Glu Ile Val Asp Ser
100 105 110

Tyr Leu Pro Val Ile Leu Asp Ile Ile Lys Gly Glu Met Ser Arg Pro
115 120 125

Gly Glu Val Cys Ser Ala Leu Asn Leu Cys Glu Ser Leu Gln Lys His
130 135 140

Leu Ala Glu Leu Asn His Gln Lys Gln Leu Glu Ser Asn Lys Ile Pro
145 150 155 160

Glu Leu Asp Met Thr Glu Val Val Ala Pro Phe Met Ala Asn Ile Pro
165 170 175

Leu Leu Leu Tyr Pro Gln Asp Gly Pro Arg Ser Lys Pro Gln Pro Lys
180 185 190

1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622 2623 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638 2639 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654 2655 2656 2657 2658 2659 2660 2661 2662 2663 2664 2665 2666 2667 2668 2669 2670 2671 2672 2673 2674 2675 2676 2677 2678 2679 2680 2681 2682 2683 2684 2685 2686 2687 2688 2689 2690 2691 2692 2693 2694 2695 2696 2697 2698 2699 2700 2701 2702 2703 2704 2705 2706 2707 2708 2709 2710 2711 2712 2713 2714 2715 2716 2717 2718 2719 2720 2721 2722 2723 2724 2725 2726 2727 2728 2729 2730 2731 2732 2733 2734 2735 2736 2737 2738 2739 2740 2741 2742 2743 2744 2745 2746 2747 2748 2749 2750 2751 2752 2753 2754 2755 2756 2757 2758 2759 2760 2761 2762 2763 2764 2765 2766 2767 2768 2769 2770 2771 2772 2773 2774 2775 2776 2777 2778 2779 2780 2781 2782 2783 2784 2785 2786 2787 2788 2789 2790 2791 2792 2793 2794 2795 2796 2797 2798 2799 2800 2801 2802 2803 2804 2805 2806 2807 2808 2809

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| His | Val | Lys | Glu | Glu | Cys | Asp | Arg | Leu | Gly | Pro | Gly | Met | Ala | Asp | Ile |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |

Met His Met Gln Asp Gln Gln Pro Lys Glu Ile Cys Ala Leu Val Gly
260 265 270

Lys Val Ala Ser Lys Asn Val Ile Pro Ala Leu Glu Leu Val Glu Pro
290 295 300

Cys Glu Phe Leu Val Lys Glu Val Thr Lys Leu Ile Asp Asn Asn Lys
325 330 335

Pro Lys Ser Leu Ser Glu Glu Cys Gln Glu Val Val Asp Thr Tyr Gly
355 360 365

Cys Ser Met Leu His Leu Cys Ser Gly Thr Arg Leu Pro Ala Leu Thr
385 390 395 400

107

Lys Leu Val Gly Tyr Leu Asp Arg Asn Leu Glu Lys Asn Ser Thr Lys
 420 425 430

Gln Glu Ile Leu Ala Ala Leu Glu Lys Gly Cys Ser Phe Leu Pro Asp
 435 440 445

Pro Tyr Gln Lys Gln Cys Asp Gln Phe Val Ala Glu Tyr Glu Pro Val
 450 455 460

Leu Ile Glu Ile Leu Val Glu Val Met Asp Pro Ser Phe Val Cys Leu
 465 470 475 480

Lys Ile Gly Ala Cys Pro Ser Ala His Lys Pro Leu Leu Gly Thr Glu
 485 490 495

Lys Cys Ile Trp Gly Pro Ser Tyr Trp Cys Gln Asn Thr Glu Thr Ala
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Ala Gln Cys Asn Ala Val Glu His Cys Lys Arg His Val Trp Asn
 515 520 525

<210> 62
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 <212> PRT
 <213> Sus scrofa

<400> 62

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Ile Glu Thr Gly Pro Phe Leu Glu Ala Val Ser His Leu Pro Pro Phe
 20 25 30

Phe Asp Cys Leu Gly Ser Pro Val Phe Thr Pro Ile Lys Ala Asp Ile
 35 40 45

Ser Gly Asn Ile Thr Lys Ile Lys Ala Val Tyr Asp Thr Asn Pro Ala
 50 55 60

Lys Phe Arg Thr Leu Gln Asn Ile Leu Glu Val Glu Lys Glu Met Tyr
 65 70 75 80

Tyr Pro Ser Pro Asp Ile Ser Pro Pro Ile Phe Arg Arg Gly Glu Lys
 35 40 45

Leu Arg Val Ile Ser Asp Glu Gly Gly Trp Trp Lys Ala Ile Ser Leu
 50 55 60

Ser Thr Gly Arg Glu Ser Tyr Ile Pro Gly Ile Cys Val Ala Arg Val
 65 70 75 80

Tyr His Gly Trp Leu Phe Glu Gly Leu Gly Arg Asp Lys Ala Glu Glu
 85 90 95

Leu Leu Gln Leu Pro Asp Thr Lys Val Gly Ser Phe Met Ile Arg Glu
 100 105 110

Ser Glu Thr Lys Lys Gly Phe Tyr Ser Leu Ser Val Arg His Arg Gln
 115 120 125

Val Lys His Tyr Arg Ile Phe Arg Leu Pro Asn Asn Trp Tyr Tyr Ile
 130 135 140

Ser Pro Arg Leu Thr Phe Gln Cys Leu Glu Asp Leu Val Asn His Tyr
 145 150 155 160

Ser Glu Val Ala Asp Gly Leu Cys Cys Val Leu Thr Thr Pro Cys Leu
 165 170 175

Thr Gln Ser Thr Ala Ala Pro Ala Val Arg Ala Ser Ser Ser Pro Val
 180 185 190

Thr Leu Arg Gln Lys Thr Val Asp Trp Arg Arg Val Ser Arg Leu Gln
 195 200 205

Glu Asp Pro Glu Gly Thr Glu Asn Pro Leu Gly Val Asp Glu Ser Leu
 210 215 220

Phe Ser Tyr Gly Leu Arg Glu Ser Ile Ala Ser Tyr Leu Ser Leu Thr
 225 230 235 240

Ser Glu Asp Asn Thr Ser Phe Asp Arg Lys Lys Lys Ser Ile Ser Leu
 245 250 255

| | |
|---|-----|
| aat ttg aaa aag aaa aac att tat tca att cgt aaa cta ggt gta ggt Leu Lys Lys Lys Asn Ile Tyr Ser Ile Arg Lys Leu Gly Val Gly 1 5 10 15 | 228 |
| att gca tct gta act tta ggt aca tta ctt ata tct ggt ggc gta aca Ile Ala Ser Val Thr Leu Gly Thr Leu Leu Ile Ser Gly Gly Val Thr 20 25 30 | 276 |
| cct gct gca aat gct gcg caa cac gat gaa gct caa caa aat gct ttt Pro Ala Ala Asn Ala Ala Gln His Asp Glu Ala Gln Gln Asn Ala Phe 35 40 45 | 324 |
| tat caa gtc tta aat atg cct aac tta aat gct gat caa cgc aat ggt Tyr Gln Val Leu Asn Met Pro Asn Leu Asn Ala Asp Gln Arg Asn Gly 50 55 60 | 372 |
| ttt atc caa agc ctt aaa gat gat cca agc caa agt gct aac gtt tta Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Val Leu 65 70 75 | 420 |
| ggg gaa gct caa aaa ctt aat gac tct caa gct cca aaa gct gat gcg Gly Glu Ala Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala 80 85 90 95 | 468 |
| caa caa aat aac ttc gac aaa gat caa caa agc gcc ttc tat gaa atc Gln Gln Asn Asn Phe Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile 100 105 110 | 516 |
| ttg aac atg cct aac tta aac gaa gcg caa cgt aac ggc ttc att caa Leu Asn Met Pro Asn Leu Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln 115 120 125 | 564 |
| agt ctt aaa gac gac cca agc caa agc act aac gtt tta ggt gaa gct Ser Leu Lys Asp Asp Pro Ser Gln Ser Thr Asn Val Leu Gly Glu Ala 130 135 140 | 612 |
| aaa aaa tta aac gaa tct caa gca ccg aaa gct gat aac aat ttc aac Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn 145 150 155 | 660 |
| aaa gaa caa caa aat gct ttc tat gaa atc ttg aat atg cct aac tta Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu 160 165 170 175 | 708 |
| aac gaa gaa caa cgc aat ggt ttc atc caa agc tta aaa gat gac cca Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro 180 185 190 | 756 |
| agc caa agt gct aac cta ttg tca gaa gct aaa aag tta aat gaa tct Ser Gln Ser Ala Asn Leu Leu Ser Glu Ala Lys Lys Leu Asn Glu Ser 195 200 205 | 804 |
| caa gca ccg aaa gcg gat aac aaa ttc aac aaa gaa caa caa aat gct Gln Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala 210 215 220 | 852 |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| ttc | tat | gaa | atc | tta | cat | tta | cct | aac | tta | aac | gaa | gaa | caa | cgc | aat | 900 |
| Phe | Tyr | Glu | Ile | Leu | His | Leu | Pro | Asn | Leu | Asn | Glu | Glu | Gln | Arg | Asn | |
| 225 | | | | | | 230 | | | | | 235 | | | | | |
| ggt | ttc | atc | caa | agc | cta | aaa | gat | gac | cca | agc | caa | agc | gct | aac | ctt | 948 |
| Gly | Phe | Ile | Gln | Ser | Leu | Lys | Asp | Asp | Pro | Ser | Gln | Ser | Ala | Asn | Leu | |
| 240 | | | | | 245 | | | | | 250 | | | | | 255 | |
| tta | gca | gaa | gct | aaa | aag | cta | aat | gat | gct | caa | gca | cca | aaa | gct | gac | 996 |
| Leu | Ala | Glu | Ala | Lys | Lys | Leu | Asn | Asp | Ala | Gln | Ala | Pro | Lys | Ala | Asp | |
| | | | | 260 | | | | | 265 | | | | | 270 | | |
| aac | aaa | ttc | aac | aaa | gaa | caa | caa | aat | gct | ttc | tat | gaa | att | tta | cat | 1044 |
| Asn | Lys | Phe | Asn | Lys | Glu | Gln | Gln | Asn | Ala | Phe | Tyr | Glu | Ile | Leu | His | |
| | | | 275 | | | | | 280 | | | | | 285 | | | |
| tta | cct | aac | tta | act | gaa | gaa | caa | cgt | aac | ggc | ttc | atc | caa | agc | ctt | 1092 |
| Leu | Pro | Asn | Leu | Thr | Glu | Glu | Gln | Arg | Asn | Gly | Phe | Ile | Gln | Ser | Leu | |
| | | 290 | | | | | 295 | | | | | 300 | | | | |
| aaa | gac | gat | cct | tcg | gtg | agc | aaa | gaa | att | tta | gca | gaa | gct | aaa | aag | 1140 |
| Lys | Asp | Asp | Pro | Ser | Val | Ser | Lys | Glu | Ile | Leu | Ala | Glu | Ala | Lys | Lys | |
| | 305 | | | | | 310 | | | | | 315 | | | | | |
| cta | aac | gat | gct | caa | gca | cca | aaa | gag | gaa | gac | aat | aac | aag | cct | ggc | 1188 |
| Leu | Asn | Asp | Ala | Gln | Ala | Pro | Lys | Glu | Glu | Asp | Asn | Asn | Lys | Pro | Gly | |
| 320 | | | | 325 | | | | | | 330 | | | | | 335 | |
| aaa | gaa | gac | aat | aac | aag | cct | ggc | aaa | gaa | gac | aat | aac | aag | cct | ggc | 1236 |
| Lys | Glu | Asp | Asn | Asn | Lys | Pro | Gly | Lys | Glu | Asp | Asn | Asn | Lys | Pro | Gly | |
| | | | 340 | | | | | 345 | | | | | | 350 | | |
| aaa | gaa | gac | aac | aac | aag | cct | ggc | aaa | gaa | gac | aac | aac | aag | cct | ggc | 1284 |
| Lys | Glu | Asp | Asn | Asn | Lys | Pro | Gly | Lys | Glu | Asp | Asn | Asn | Lys | Pro | Gly | |
| | | | 355 | | | | | 360 | | | | | 365 | | | |
| aaa | gaa | gac | aac | aac | aag | cct | ggc | aaa | gaa | gac | ggc | aac | aag | cct | ggc | 1332 |
| Lys | Glu | Asp | Asn | Asn | Lys | Pro | Gly | Lys | Glu | Asp | Gly | Asn | Lys | Pro | Gly | |
| | | 370 | | | | | 375 | | | | 380 | | | | | |
| aaa | gaa | gac | aac | aaa | aaa | cct | ggc | aaa | gaa | gat | ggc | aac | aag | cct | ggc | 1380 |
| Lys | Glu | Asp | Asn | Lys | Lys | Pro | Gly | Lys | Glu | Asp | Gly | Asn | Lys | Pro | Gly | |
| | 385 | | | | | 390 | | | | | 395 | | | | | |
| aaa | gaa | gac | aac | aaa | aaa | cct | ggc | aaa | gaa | gac | ggc | aac | aag | cct | ggc | 1428 |
| Lys | Glu | Asp | Asn | Lys | Lys | Pro | Gly | Lys | Glu | Asp | Gly | Asn | Lys | Pro | Gly | |
| 400 | | | | 405 | | | | | | 410 | | | | 415 | | |
| aaa | gaa | gat | ggc | aac | aaa | cct | ggc | aaa | gaa | gat | ggc | aac | gga | gta | cat | 1476 |
| Lys | Glu | Asp | Gly | Asn | Lys | Pro | Gly | Lys | Glu | Asp | Gly | Asn | Gly | Val | His | |
| | | | | 420 | | | | 425 | | | | | | | | |

act act gct gac aaa att gct gca gat aac aaa ttg gct gat aaa aac 1572
 Thr Thr Ala Asp Lys Ile Ala Ala Asp Asn Lys Leu Ala Asp Lys Asn
 450 455 460

atg atc aaa ctt ggt caa gaa ctt gtt gtt gat aag aag caa cca caa 1620
 Met Ile Lys Leu Gly Gln Glu Leu Val Val Asp Lys Lys Gln Pro Gln
 465 470 475

acc atg cag agc taa caaagctcaa gcattatcag aaactggcga agaaaatcca 1675
 Thr Met Gln Ser
 480

ttcatcggtg caactgtatt tgggtggatta tcattagcct taggtgcagc gttattagct 1735

ggacgtcgtc gcgaactata aaaacaaaca atacacaacg atagatatc 1784

<210> 68

<211> 483

<212> PRT

<213> Staphylococcus aureus

<400> 68

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Ala Ser Val Thr Leu Gly Thr Leu Leu Ile Ser Gly Gly Val Thr Pro
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Ala Ala Asn Ala Ala Gln His Asp Glu Ala Gln Gln Asn Ala Phe Tyr
 35 40 45

Gln Val Leu Asn Met Pro Asn Leu Asn Ala Asp Gln Arg Asn Gly Phe
 50 55 60

Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Val Leu Gly
 65 70 75 80

Glu Ala Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala Gln
 85 90 95

Gln Asn Asn Phe Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu
 100 105 110

Asn Met Pro Asn Leu Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln Ser
 115 120 125

Leu Lys Asp Asp Pro Ser Gln Ser Thr Asn Val Leu Gly Glu Ala Lys
 130 135 140

Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys
 145 150 155 160

Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn
 165 170 175

Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser
 180 185 190

Gln Ser Ala Asn Leu Leu Ser Glu Ala Lys Lys Leu Asn Glu Ser Gln
 195 200 205

Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe
 210 215 220

Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly
 225 230 235 240

Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu
 245 250 255

Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ala Asp Asn
 260 265 270

Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu
 275 280 285

Pro Asn Leu Thr Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys
 290 295 300

Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Ala Glu Ala Lys Lys Leu
 305 310 315 320

Asn Asp Ala Gln Ala Pro Lys Glu Glu Asp Asn Asn Lys Pro Gly Lys
 325 330 335

Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly Lys
 340 345 350

Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly Lys
 355 360 365

Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
 370 375 380

Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
 385 390 395 400

Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
 405 410 415

Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Gly Val His Val
 420 425 430

Val Lys Leu Gly Asp Thr Val Asn Asp Ile Ala Lys Ala Asn Gly Thr
 435 440 445

Thr Ala Asp Lys Ile Ala Ala Asp Asn Lys Leu Ala Asp Lys Asn Met
 450 455 460

Ile Lys Leu Gly Gln Glu Leu Val Val Asp Lys Lys Gln Pro Gln Thr
 465 470 475 480

Met Gln Ser

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 <211> 279
 <212> DNA
 <213> Homo sapiens

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 <222> (1)..(279)
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 Val Lys Pro Lys Ala Trp Leu Ser Arg Gly Pro Ser Pro Gly Pro Gly
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 cgt ctg ctg ctg gtg tgc cat gtc tca gga ttc tac cca aag cct gta 96
 Arg Leu Leu Leu Val Cys His Val Ser Gly Phe Tyr Pro Lys Pro Val
 20 25 30

tgg gtg aag tgg atg cgg ggt gag cag gag cag cag ggc act cag cca 144
 Trp Val Lys Trp Met Arg Gly Glu Gln Glu Gln Gln Gly Thr Gln Pro
 35 40 45

ggg gac atc ctg ccc aat gct gac gag aca tgg tat ctc cga gca acc 192
 Gly Asp Ile Leu Pro Asn Ala Asp Glu Thr Trp Tyr Leu Arg Ala Thr
 50 55 60

ctg gat gtg gtg gct ggg gag gca gct ggc ctg tcc tgt cgg gtg aag 240
 Leu Asp Val Val Ala Gly Glu Ala Ala Gly Leu Ser Cys Arg Val Lys
 65 70 75 80

cac agc agt cta gag ggc cag gac atc gtc ctc tac tgg 279
 His Ser Ser Leu Glu Gly Gln Asp Ile Val Leu Tyr Trp
 85 90

<210> 70
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 <213> Homo sapiens

<400> 70

Val Lys Pro Lys Ala Trp Leu Ser Arg Gly Pro Ser Pro Gly Pro Gly
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Arg Leu Leu Leu Val Cys His Val Ser Gly Phe Tyr Pro Lys Pro Val
 20 25 30

Trp Val Lys Trp Met Arg Gly Glu Gln Glu Gln Gln Gly Thr Gln Pro
 35 40 45

Gly Asp Ile Leu Pro Asn Ala Asp Glu Thr Trp Tyr Leu Arg Ala Thr
 50 55 60

Leu Asp Val Val Ala Gly Glu Ala Ala Gly Leu Ser Cys Arg Val Lys
 65 70 75 80

His Ser Ser Leu Glu Gly Gln Asp Ile Val Leu Tyr Trp
 85 90

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 <211> 1873
 <212> DNA
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 gaacaagccc gtggaacctg gaagccagag aacaccatcg ctgtaaagga aagaaactga 120
 agctttttctc ggagcctatc tgggctgctc aaactttcag aatctaccga cc atg 175
 Met
 1
 gtgagtcaga cagactgtct tgggggtggaa ctggagccaa cctgaggaat ctcaggggcc 235
 tggcaggagt ctccctgtcc cctactttc tcctcag gag cgt gtg ctt ggc ttg 290
 Glu Arg Val Leu Gly Leu
 5
 ttg ctg ttg ctt ctg gtg cac gcc tct ccc gcc cca cca gag ccc tgc 338
 Leu Leu Leu Leu Leu Val His Ala Ser Pro Ala Pro Pro Glu Pro Cys
 10 15 20
 gag cta gac gag gaa agt tgc tcc tgc aac ttc tca gat ccg aag cca 386
 Glu Leu Asp Glu Glu Ser Cys Ser Cys Asn Phe Ser Asp Pro Lys Pro
 25 30 35
 gat tgg tcc agc gct ttc aat tgt ttg ggg gcg gca gat gtg gaa ttg 434
 Asp Trp Ser Ser Ala Phe Asn Cys Leu Gly Ala Ala Asp Val Glu Leu
 40 45 50 55
 tac ggc' ggc ggc cgc agc ctg gaa tac ctt cta aag cgt gtg gac acg 482
 Tyr Gly Gly Gly Arg Ser Leu Glu Tyr Leu Leu Lys Arg Val Asp Thr
 60 65 70
 gaa gca gat ctg ggg cag ttc act gat att atc aag tct ctg tcc tta 530
 Glu Ala Asp Leu Gly Gln Phe Thr Asp Ile Ile Lys Ser Leu Ser Leu
 75 80 85
 aag cgg ctt acg gtg cgg gcc gcg cgg att cct agt cgg att cta ttc 578
 Lys Arg Leu Thr Val Arg Ala Ala Arg Ile Pro Ser Arg Ile Leu Phe
 90 95 100

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| gga | gcc | ctg | cgt | gtg | ctc | ggg | att | tcc | ggc | ctc | cag | gaa | ctg | act | ctt | 626 |
| Gly | Ala | Leu | Arg | Val | Leu | Gly | Ile | Ser | Gly | Leu | Gln | Glu | Leu | Thr | Leu | |
| 105 | | | | | | 110 | | | | | 115 | | | | | |
| gaa | aat | ctc | gag | gta | acc | ggc | acc | gcg | ccg | cca | ccg | ctt | ctg | gaa | gcc | 674 |
| Glu | Asn | Leu | Glu | Val | Thr | Gly | Thr | Ala | Pro | Pro | Pro | Leu | Leu | Glu | Ala | |
| 120 | | | | | 125 | | | | | 130 | | | | | 135 | |
| acc | gga | ccc | gat | ctc | aac | atc | ttg | aac | ctc | cgc | aac | gtg | tcg | tgg | gca | 722 |
| Thr | Gly | Pro | Asp | Leu | Asn | Ile | Leu | Asn | Leu | Arg | Asn | Val | Ser | Trp | Ala | |
| | | | | 140 | | | | | 145 | | | | | | 150 | |
| aca | agg | gat | gcc | tgg | ctc | gca | gaa | ctg | cag | cag | tgg | cta | aag | cct | gga | 770 |
| Thr | Arg | Asp | Ala | Trp | Leu | Ala | Glu | Leu | Gln | Gln | Trp | Leu | Lys | Pro | Gly | |
| | | | 155 | | | | | 160 | | | | | 165 | | | |
| ctc | aag | gta | ctg | agt | att | gcc | caa | gca | cac | tca | ctc | aac | ttt | tcc | tgc | 818 |
| Leu | Lys | Val | Leu | Ser | Ile | Ala | Gln | Ala | His | Ser | Leu | Asn | Phe | Ser | Cys | |
| | | 170 | | | | | 175 | | | | | 180 | | | | |
| gaa | cag | gtc | cgc | gtc | ttc | cct | gcc | ctc | tcc | acc | tta | gac | ctg | tct | gac | 866 |
| Glu | Gln | Val | Arg | Val | Phe | Pro | Ala | Leu | Ser | Thr | Leu | Asp | Leu | Ser | Asp | |
| | 185 | | | | | 190 | | | | | 195 | | | | | |
| aat | cct | gaa | ttg | ggc | gag | aga | gga | ctg | atc | tca | gcc | ctc | tgt | ccc | ctc | 914 |
| Asn | Pro | Glu | Leu | Gly | Glu | Arg | Gly | Leu | Ile | Ser | Ala | Leu | Cys | Pro | Leu | |
| 200 | | | | | 205 | | | | | 210 | | | | | 215 | |
| aag | ttc | ccg | acc | ctc | caa | gtt | tta | gcg | ctg | cgt | aac | gcg | ggg | atg | gag | 962 |
| Lys | Phe | Pro | Thr | Leu | Gln | Val | Leu | Ala | Leu | Arg | Asn | Ala | Gly | Met | Glu | |
| | | | | 220 | | | | | 225 | | | | | 230 | | |
| acg | ccc | agc | ggc | gtg | tgc | tct | gcg | ctg | gcc | gca | gca | agg | gta | cag | ctg | 1010 |
| Thr | Pro | Ser | Gly | Val | Cys | Ser | Ala | Leu | Ala | Ala | Ala | Arg | Val | Gln | Leu | |
| | | | 235 | | | | | 240 | | | | | 245 | | | |
| caa | gga | cta | gac | ctt | agt | cac | aat | tca | ctg | cgg | gat | gct | gca | ggc | gct | 1058 |
| Gln | Gly | Leu | Asp | Leu | Ser | His | Asn | Ser | Leu | Arg | Asp | Ala | Ala | Gly | Ala | |
| | | 250 | | | | | 255 | | | | | 260 | | | | |
| ccg | agt | tgt | gac | tgg | ccc | agt | cag | cta | aac | tcg | ctc | aat | ctg | tct | ttc | 1106 |
| Pro | Ser | Cys | Asp | Trp | Pro | Ser | Gln | Leu | Asn | Ser | Leu | Asn | Leu | Ser | Phe | |
| | 265 | | | | | 270 | | | | | 275 | | | | | |
| act | ggg | ctg | aag | cag | gta | cct | aaa | ggg | ctg | cca | gcc | aag | ctc | agc | gtg | 1154 |
| Thr | Gly | Leu | Lys | Gln | Val | Pro | Lys | Gly | Leu | Pro | Ala | Lys | Leu | Ser | Val | |
| 280 | | | | | 285 | | | | | 290 | | | | | 295 | |
| ctg | gat | ctc | agt | tac | aac | agg | ctg | gat | agg | aac | cct | agc | cca | gat | gag | 1202 |
| Leu | Asp | Leu | Ser | Tyr | Asn | Arg | Leu | Asp | Arg | Asn | Pro | Ser | Pro | Asp | Glu | |
| | | | | 300 | | | | </ | | | | | | | | |

tct gaa tcc cac tcg gag aag ttt aac tct ggc gta gtc acc gcc gga 1298
 Ser Glu Ser His Ser Glu Lys Phe Asn Ser Gly Val Val Thr Ala Gly
 330 335 340

gct cca tca tcc caa gca gtg gcc ttg tca gga act ctg gct ttg ctc 1346
 Ala Pro Ser Ser Gln Ala Val Ala Leu Ser Gly Thr Leu Ala Leu Leu
 345 350 355

cta gga gat cgc ctc ttt gtt taaggaacat ttgcatcctc ctggtttctg 1397
 Leu Gly Asp Arg Leu Phe Val
 360 365

agggtcctcg tcaacgaatc ctctgcttta aatttattaa aatcttaatc cacgatgtaa 1457

ggaaagaaag gcagtcgaaga tggttcagtg ggtaaaagcc agcaaacttg acccctgatt 1517

ttaaccctca ggatccacac ggaaggggaa aactcactcc tgaaagttgt ccatctgtgc 1577

tcacaaataa atatttttta aaataacaat gtgtttgttg gttttgtttt tgtttggggt 1637

ttgttgtggt tttgtttgtt ttgttttgtt tttgagacag tctggctatg tatccttggc 1697

tggcctcaaa ctcataaaga tcaagatcgg cctgcctcta cctccaaatg ctctgggttaa 1757

agggatgtgc ctccatgccc agttgaagtc atcctgaacc acgagtccag gccactcact 1817

ctttactaag atctttacta agtatctgcc ataggtcagg ctcaagtgcta aatgag 1873

<210> 72
 <211> 366
 <212> PRT
 <213> Mus musculus

<400> 72

Met Glu Arg Val Leu Gly Leu Leu Leu Leu Leu Val His Ala Ser
 1 5 10 15

Pro Ala Pro Pro Glu Pro Cys Glu Leu Asp Glu Glu Ser Cys Ser Cys
 20 25 30

Asn Phe Ser Asp Pro Lys Pro Asp Trp Ser Ser Ala Phe Asn Cys Leu
 35 40 45

Gly Ala Ala Asp Val Glu Leu Tyr Gly Gly Gly Arg Ser Leu Glu Tyr
 50 55 60

Leu Leu Lys Arg Val Asp Thr Glu Ala Asp Leu Gly Gln Phe Thr Asp
 65 70 75 80

Arg Asn Pro Ser Pro Asp Glu Leu Pro Gln Val Gly Asn Leu Ser Leu
 305 310 315 320

Lys Gly Asn Pro Phe Leu Asp Ser Glu Ser His Ser Glu Lys Phe Asn
 325 330 335

Ser Gly Val Val Thr Ala Gly Ala Pro Ser Ser Gln Ala Val Ala Leu
 340 345 350

Ser Gly Thr Leu Ala Leu Leu Leu Gly Asp Arg Leu Phe Val
 355 360 365

<210> 73
 <211> 365
 <212> PRT
 <213> Mus musculus

<400> 73

Met Asp Lys Phe Trp Trp His Thr Ala Trp Gly Leu Cys Leu Leu Gln
 1 5 10 15

Leu Ser Leu Ala His Pro His Gln Gln Ile Asp Leu Asn Val Thr Cys
 20 25 30

Arg Tyr Ala Gly Val Phe His Val Glu Lys Asn Gly Arg Tyr Ser Ile
 35 40 45

Ser Arg Thr Glu Ala Ala Asp Leu Cys Gln Ala Phe Asn Ser Thr Leu
 50 55 60

Pro Thr Met Asp Gln Met Lys Leu Ala Leu Ser Lys Gly Phe Glu Thr
 65 70 75 80

Cys Arg Tyr Gly Phe Ile Glu Gly Asn Val Val Ile Pro Arg Ile His
 85 90 95

Pro Asn Ala Ile Cys Ala Ala Asn His Thr Gly Val Tyr Ile Leu Val
 100 105 110

Thr Ser Asn Thr Ser His Tyr Asp Thr Tyr Cys Phe Asn Ala Ser Ala
 115 120 125

Thr Arg Asn Leu Gln Ser Val Asp Met Lys Ile Gly Val
355 360 365

<210> 74
<211> 371
<212> PRT
<213> Mus musculus

<400> 74

Met Asn Val Lys Gly Lys Val Ile Leu Leu Met Leu Ile Val Ser Thr
1 5 10 15

Val Val Val Val Phe Trp Glu Tyr Val Asn Ser Pro Asp Gly Ser Phe
20 25 30

Leu Trp Ile Tyr His Thr Lys Ile Pro Glu Val Gly Glu Asn Arg Trp
35 40 45

Gln Lys Asp Trp Trp Phe Pro Ser Trp Phe Lys Asn Gly Thr His Ser
50 55 60

Tyr Gln Glu Asp Asn Val Glu Gly Arg Arg Glu Lys Gly Arg Asn Gly
65 70 75 80

Asp Arg Ile Glu Glu Pro Gln Leu Trp Asp Trp Phe Asn Pro Lys Asn
85 90 95

Arg Pro Asp Val Leu Thr Val Thr Pro Trp Lys Ala Pro Ile Val Trp
100 105 110

Glu Gly Thr Tyr Asp Thr Ala Leu Leu Glu Lys Tyr Tyr Ala Thr Gln
115 120 125

Lys Leu Thr Val Gly Leu Thr Val Phe Ala Val Gly Lys Tyr Ile Glu
130 135 140

His Tyr Leu Glu Asp Phe Leu Glu Ser Ala Asp Met Tyr Phe Met Val
145 150 155 160

Gly His Arg Val Ile Phe Tyr Val Met Ile Asp Asp Thr Ser Arg Met
165 170 175

Pro Val Val His Leu Asn Pro Leu His Ser Leu Gln Val Phe Glu Ile
180 185 190

Arg Ser Glu Lys Arg Trp Gln Asp Ile Ser Met Met Arg Met Lys Thr
195 200 205

Ile Gly Glu His Ile Leu Ala His Ile Gln His Glu Val Asp Phe Leu
210 215 220

Phe Cys Met Asp Val Asp Gln Val Phe Gln Asp Asn Phe Gly Val Glu
225 230 235 240

Thr Leu Gly Gln Leu Val Ala Gln Leu Gln Ala Trp Trp Tyr Lys Ala
245 250 255

Ser Pro Glu Lys Phe Thr Tyr Glu Arg Arg Glu Leu Ser Ala Ala Tyr
260 265 270

Ile Pro Phe Gly Glu Gly Asp Phe Tyr Tyr His Ala Ala Ile Phe Gly
275 280 285

Gly Thr Pro Thr His Ile Leu Asn Leu Thr Arg Glu Cys Phe Lys Gly
290 295 300

Ile Leu Gln Asp Lys Lys His Asp Ile Glu Ala Gln Trp His Asp Glu
305 310 315 320

Ser His Leu Asn Lys Tyr Phe Leu Phe Asn Lys Pro Thr Lys Ile Leu
325 330 335

Ser Pro Glu Tyr Cys Trp Asp Tyr Gln Ile Gly Leu Pro Ser Asp Ile
340 345 350

Lys Ser Val Lys Val Ala Trp Gln Thr Lys Glu Tyr Asn Leu Val Arg
355 360 365

Asn Asn Val
370

| | |
|---|-----|
| cgt agt gat gtc atc tta ctg gag agc gag ata ggc ttt gag aca gac | 213 |
| Arg Ser Asp Val Ile Leu Leu Glu Ser Glu Ile Gly Phe Glu Thr Asp | |
| 25 30 35 | |
| aca ggt ttt gcc aga gca ggt gat ggg cac aat cga ttt agt gac ctt | 261 |
| Thr Gly Phe Ala Arg Ala Gly Asp Gly His Asn Arg Phe Ser Asp Leu | |
| 40 45 50 | |
| gga tac att agt cca ctc gat tac aat cta ctg act aac aag cca aat | 309 |
| Gly Tyr Ile Ser Pro Leu Asp Tyr Asn Leu Leu Thr Asn Lys Pro Asn | |
| 55 60 65 | |
| att gat gga tta gcg aca aaa gtc gag acc gct cag aaa cta caa caa | 357 |
| Ile Asp Gly Leu Ala Thr Lys Val Glu Thr Ala Gln Lys Leu Gln Gln | |
| 70 75 80 | |
| aaa gca gat aaa gag acc gtc tat aca aaa gct gaa tcg aag caa gag | 405 |
| Lys Ala Asp Lys Glu Thr Val Tyr Thr Lys Ala Glu Ser Lys Gln Glu | |
| 85 90 95 100 | |
| ctt gac aag aaa tta aat ctc aaa ggt ggc gtt atg aca ggt caa cta | 453 |
| Leu Asp Lys Lys Leu Asn Leu Lys Gly Gly Val Met Thr Gly Gln Leu | |
| 105 110 115 | |
| aaa ttt aag cca gcc gcc act gtt gct tat tcc tcg tca acg ggt gga | 501 |
| Lys Phe Lys Pro Ala Ala Thr Val Ala Tyr Ser Ser Ser Thr Gly Gly | |
| 120 125 130 | |
| gcg gtc aat att gac ttg tcg tct acc aga ggt gct ggt gtt gtt gtc | 549 |
| Ala Val Asn Ile Asp Leu Ser Ser Thr Arg Gly Ala Gly Val Val Val | |
| 135 140 145 | |
| tat tct gac aat gat acc agt gat ggg ccg tta atg agc ttg cgg acg | 597 |
| Tyr Ser Asp Asn Asp Thr Ser Asp Gly Pro Leu Met Ser Leu Arg Thr | |
| 150 155 160 | |
| ggt aaa gag acc ttt aat caa tcg gcg ctt ttt gtc gac tat aag ggg | 645 |
| Gly Lys Glu Thr Phe Asn Gln Ser Ala Leu Phe Val Asp Tyr Lys Gly | |
| 165 170 175 180 | |
| aca aca aat gcc gtt aat att gcg atg cgt cac gca acc acc ccc aat | 693 |
| Thr Thr Asn Ala Val Asn Ile Ala Met Arg His Ala Thr Thr Pro Asn | |
| 185 190 195 | |
| ttt tca tcg gcg ctt aat att act agc ggc aat gaa aat ggt agt gca | 741 |
| Phe Ser Ser Ala Leu Asn Ile Thr Ser Gly Asn Glu Asn Gly Ser Ala | |
| 200 205 210 | |
| atg cag cta cga ggg tca gaa aaa gcg cta gga acg cta aaa att act | 789 |
| Met Gln Leu Arg Gly Ser Glu Lys Ala Leu Gly Thr Leu Lys Ile Thr | |
| 215 220 225 | |
| cat gag aac cca agt att gga gcg gat tat gat aaa aat gcg gca cgt | 837 |
| His Glu Asn Pro Ser Ile Gly Ala Asp Tyr Asp Lys Asn Ala Ala Arg | |
| 230 235 240 | |

tat cca ttg ata ttg tca aaa aga caa aac ggt gca gga aca gcc gct 885
 Tyr Pro Leu Ile Leu Ser Lys Arg Gln Asn Gly Ala Gly Thr Ala Ala
 245 250 255 260

cag gga atc tac att aac tca acc tca ggc acg aca ggg aag ttg ctt 933
 Gln Gly Ile Tyr Ile Asn Ser Thr Ser Gly Thr Thr Gly Lys Leu Leu
 265 270 275

agg att aga aac ctt agt gat gat aag ttc tac gtc aag tct gac ggt 981
 Arg Ile Arg Asn Leu Ser Asp Asp Lys Phe Tyr Val Lys Ser Asp Gly
 280 285 290

ggt ttt tat gcc aag gaa act tcg cag att gat ggc aac ctg aaa ctc 1029
 Gly Phe Tyr Ala Lys Glu Thr Ser Gln Ile Asp Gly Asn Leu Lys Leu
 295 300 305

aag gac ccc aca gcg aat gat cat gcg gca acc aaa gct tat gta gat 1077
 Lys Asp Pro Thr Ala Asn Asp His Ala Ala Thr Lys Ala Tyr Val Asp
 310 315 320

aaa gca att tct gag tta aaa aaa ctc ata cta aaa aaa tag 1119
 Lys Ala Ile Ser Glu Leu Lys Lys Leu Ile Leu Lys Lys
 325 330 335

attaaggagg ataaatgagc agagacccaa cacttatttt agacgagtca aacctcggtta 1179

ttggtaagga tggacgtg 1197

<210> 78

<211> 337

<212> PRT

<213> Streptococcus pyogenes

<400> 78

Met Ser Glu Asn Ile Pro Leu Arg Val Gln Phe Lys Arg Met Lys Ala
 1 5 10 15

Ala Glu Trp Ala Arg Ser Asp Val Ile Leu Leu Glu Ser Glu Ile Gly
 20 25 30

Phe Glu Thr Asp Thr Gly Phe Ala Arg Ala Gly Asp Gly His Asn Arg
 35 40 45

Phe Ser Asp Leu Gly Tyr Ile Ser Pro Leu Asp Tyr Asn Leu Leu Thr
 50 55 60

Asn Lys Pro Asn Ile Asp Gly Leu Ala Thr Lys Val Glu Thr Ala Gln
 65 70 75 80

Lys Leu Gln Gln Lys Ala Asp Lys Glu Thr Val Tyr Thr Lys Ala Glu
85 90 95

Ser Lys Gln Glu Leu Asp Lys Lys Leu Asn Leu Lys Gly Gly Val Met
100 105 110

Thr Gly Gln Leu Lys Phe Lys Pro Ala Ala Thr Val Ala Tyr Ser Ser
115 120 125

Ser Thr Gly Gly Ala Val Asn Ile Asp Leu Ser Ser Thr Arg Gly Ala
130 135 140

Gly Val Val Val Tyr Ser Asp Asn Asp Thr Ser Asp Gly Pro Leu Met
145 150 155 160

Ser Leu Arg Thr Gly Lys Glu Thr Phe Asn Gln Ser Ala Leu Phe Val
165 170 175

Asp Tyr Lys Gly Thr Thr Asn Ala Val Asn Ile Ala Met Arg His Ala
180 185 190

Thr Thr Pro Asn Phe Ser Ser Ala Leu Asn Ile Thr Ser Gly Asn Glu
195 200 205

Asn Gly Ser Ala Met Gln Leu Arg Gly Ser Glu Lys Ala Leu Gly Thr
210 215 220

Leu Lys Ile Thr His Glu Asn Pro Ser Ile Gly Ala Asp Tyr Asp Lys
225 230 235 240

Asn Ala Ala Arg Tyr Pro Leu Ile Leu Ser Lys Arg Gln Asn Gly Ala
245 250 255

Gly Thr Ala Ala Gln Gly Ile Tyr Ile Asn Ser Thr Ser Gly Thr Thr
260 265 270

Gly Lys Leu Leu Arg Ile Arg Asn Leu Ser Asp Asp Lys Phe Tyr Val
275 280 285

Lys Ser Asp Gly Gly Phe Tyr Ala Lys Glu Thr Ser Gln Ile Asp Gly
290 295 300

Asn Leu Lys Leu Lys Asp Pro Thr Ala Asn Asp His Ala Ala Thr Lys
 305 310 315 320

Ala Tyr Val Asp Lys Ala Ile Ser Glu Leu Lys Lys Leu Ile Leu Lys
 325 330 335

Lys

<210> 79
 <211> 1497
 <212> DNA
 <213> Bacteriophage T270

<220>
 <221> CDS
 <222> (286)..(1374)
 <223>

<400> 79
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 tataatgcgt ttcaacaaga tattgagcaa gataaaaacc agatagcact attgttcaac 120
 gaacatcaat tgcttgaaaa tatcgataat tagttaatct aaaacaaaaa gccccacgct 180
 ctcaaagttt ggcgactctg agcgtgaggc aagacagtat aagaaacaac cattaanaag 240
 gtcattttct tgtacctatt ttatcaaatt gaaagatggt atgca atg aaa att aaa 297
 Met Lys Ile Lys
 1
 tca tat aaa aag gaa aat ggt gaa act gct tat aaa ttt ctt ttg tat 345
 Ser Tyr Lys Lys Glu Asn Gly Glu Thr Ala Tyr Lys Phe Leu Leu Tyr
 5 10 15 20
 gcc ggt tat gtt aat gga aag aga aaa tat att agg cga gaa ggt ttc 393
 Ala Gly Tyr Val Asn Gly Lys Arg Lys Tyr Ile Arg Arg Glu Gly Phe
 25 30 35
 aaa act aag cag gct gca agg gaa acc tta att agt tta caa gct gaa 441
 Lys Thr Lys Gln Ala Ala Arg Glu Thr Leu Ile Ser Leu Gln Ala Glu
 40 45 50 J
 ctt gat aaa cct aaa tca agt atg aca ttt gga gca ttg aca gat caa 489
 Leu Asp Lys Pro Lys Ser Ser Met Thr Phe Gly Ala Leu Thr Asp Gln
 55 60 65
 tgg cta aag gaa tat gaa aaa acc gtt cag ggc agt acc tac tta aaa 537
 Trp Leu Lys Glu Tyr Glu Lys Thr Val Gln Gly Ser Thr Tyr Leu Lys
 70 75 80

| | |
|---|------|
| aca gaa aga aat att aat aaa cat att ttg cca aaa ctt gat aaa gtg | 585 |
| Thr Glu Arg Asn Ile Asn Lys His Ile Leu Pro Lys Leu Asp Lys Val | |
| 85 90 95 100 | |
| aag att gga gac atc aat cca cta ctt atc cag cgg ctt act gaa gaa | 633 |
| Lys Ile Gly Asp Ile Asn Pro Leu Leu Ile Gln Arg Leu Thr Glu Glu | |
| 105 110 115 | |
| tgg tgc aac gat tta aaa tat gga gga aaa att ctt ggg ctt gtt agg | 681 |
| Trp Cys Asn Asp Leu Lys Tyr Gly Gly Lys Ile Leu Gly Leu Val Arg | |
| 120 125 130 | |
| aat atc tta aat cta gct gtt aga tac gga tat atc aat aac aat cca | 729 |
| Asn Ile Leu Asn Leu Ala Val Arg Tyr Gly Tyr Ile Asn Asn Asn Pro | |
| 135 140 145 | |
| gct ttg cca att aca cct cca aaa ata aaa agg aaa aga aaa atg aat | 777 |
| Ala Leu Pro Ile Thr Pro Pro Lys Ile Lys Arg Lys Arg Lys Met Asn | |
| 150 155 160 | |
| aat aat ttt tat aca ctt gat caa ctt aaa caa ttc ctt gaa cta gtt | 825 |
| Asn Asn Phe Tyr Thr Leu Asp Gln Leu Lys Gln Phe Leu Glu Leu Val | |
| 165 170 175 180 | |
| gaa aaa act gac aac att gaa aaa ata gcc ttg ttt aga tta tta gca | 873 |
| Glu Lys Thr Asp Asn Ile Glu Lys Ile Ala Leu Phe Arg Leu Leu Ala | |
| 185 190 195 | |
| ttt act gga ata cga aaa ggg gag ctt ctg gca cta act tgg gat gat | 921 |
| Phe Thr Gly Ile Arg Lys Gly Glu Leu Leu Ala Leu Thr Trp Asp Asp | |
| 200 205 210 | |
| ttg aat ggt aat act cta tca att aat aaa gct gtc aca cgt act caa | 969 |
| Leu Asn Gly Asn Thr Leu Ser Ile Asn Lys Ala Val Thr Arg Thr Gln | |
| 215 220 225 | |
| gtt gga cta gaa ata gat gtt acg aag aca aaa tca agc gat aga tta | 1017 |
| Val Gly Leu Glu Ile Asp Val Thr Lys Thr Lys Ser Ser Asp Arg Leu | |
| 230 235 240 | |
| atc agc tta gat gat gaa act ttg gaa att tta caa gaa ctt cat gaa | 1065 |
| Ile Ser Leu Asp Asp Glu Thr Leu Glu Ile Leu Gln Glu Leu His Glu | |
| 245 250 255 260 | |
| act ttt cct act tct act ctt atg ttc caa tct aaa tca ggt gga att | 1113 |
| Thr Phe Pro Thr Ser Thr Leu Met Phe Gln Ser Lys Ser Gly Gly Ile | |
| 265 270 275 | |
| atg acg cca agt tta cca cga aaa tgg cta ttg caa att atc aaa ggg | 1161 |
| Met Thr Pro Ser Leu Pro Arg Lys Trp Leu Leu Gln Ile Ile Lys Gly | |
| 280 285 290 | |
| ata gac tta cca caa atc aca att cat ggt ttc agg cac act cat gca | 1209 |
| Ile Asp Leu Pro Gln Ile Thr Ile His Gly Phe Arg His Thr His Ala | |
| 295 300 305 | |

Tyr Thr His Ile Thr Gln Ser Ala Ile Asp Asp Ile Gly Thr Lys Phe
 340 345 350

Asn Gln Phe Val Thr Asn Lys Gln Leu Asp
 355 360

<210> 81
 <211> 2187
 <212> DNA
 <213> Staphylococcus aureus

<220>
 <221> CDS
 <222> (752)..(1744)
 <223>

<400> 81
 atcgataact ttctttgttc catttttaaa gtaaacagta tatttcgctt gcttcgatag 60
 tcttaaactct atactactaa tacctctgtc tgattttaaa actgatttaa ctctatcctc 120
 taaatcttta taactaatat ttgattcctt attaaatggt aagcttgata aaatattttg 180
 gcttgtaccg ttcacagtga ttgcatatgg aacatggact ttagaatatc catgggtgtaa 240
 cgaacttgat gatttatcta atggcttagc tgcggcagac gtttcattat tattaaagtt 300
 tgcacctggt gatgctaaaa cacctaatgc taaagttggt gtaatcaatg acttaaattt 360
 cataaattat ctctcctttt ttgtgtaatt cgtatttgca acttaattat agccagactt 420
 tctctatttt ttgaattaac tgaatattaa taataaatta tctttaacaa taatttttta 480
 acactgtaa aagttctttt aattttgatt aactaattaa tttaacaatac ctaaaatggt 540
 gtttggtttt gtttatacca agcttcaaac ttaaagtgtc taacaacatt catttcttaa 600
 ttccgattag atttgtcgat tatatttaca gcatctttat actcaaaaaa catttactta 660
 aaaatataaa ttctatttaa taattaattt aaatttagtt aatcaatttt gcatctattt 720
 tgttgtaagc tatataaaag gagtataat g atg gtg aaa aaa aca aaa tcc 772
 Met Val Lys Lys Thr Lys Ser
 1 5
 aat tca cta aaa aaa gtt gca aca ctt gca tta gca aat tta tta tta 820
 Asn Ser Leu Lys Lys Val Ala Thr Leu Ala Leu Ala Asn Leu Leu Leu
 10 15 20
 gtt ggt gca ctt act gac aat agt gcc aaa gcc gaa tct aag aaa gat 868
 Val Gly Ala Leu Thr Asp Asn Ser Ala Lys Ala Glu Ser Lys Lys Asp
 25 30 35

| | |
|---|------|
| gat act gat ttg aag tta gtt agt cat aac gtt tat atg tta tcg acc | 916 |
| Asp Thr Asp Leu Lys Leu Val Ser His Asn Val Tyr Met Leu Ser Thr | |
| 40 45 50 55 | |
| gtt ttg tat cca aac tgg ggg caa tat aaa cgc gct gat tta atc gga | 964 |
| Val Leu Tyr Pro Asn Trp Gly Gln Tyr Lys Arg Ala Asp Leu Ile Gly | |
| 60 65 70 | |
| caa tct tct tat att aaa aat aat gat gtc gta ata ttc aat gaa gca | 1012 |
| Gln Ser Ser Tyr Ile Lys Asn Asn Asp Val Val Ile Phe Asn Glu Ala | |
| 75 80 85 | |
| ttt gat aat ggt gca tca gac aaa tta tta agt aat gtg aaa aaa gaa | 1060 |
| Phe Asp Asn Gly Ala Ser Asp Lys Leu Leu Ser Asn Val Lys Lys Glu | |
| 90 95 100 | |
| tat cct tat caa aca cct gta ctc ggc cgt tct caa tca ggg tgg gac | 1108 |
| Tyr Pro Tyr Gln Thr Pro Val Leu Gly Arg Ser Gln Ser Gly Trp Asp | |
| 105 110 115 | |
| aaa act gaa ggt agc tac tca tca act gtt gca gaa gat ggt ggc gta | 1156 |
| Lys Thr Glu Gly Ser Tyr Ser Ser Thr Val Ala Glu Asp Gly Gly Val | |
| 120 125 130 135 | |
| gcg att gta agt aaa tat cct att aaa gaa aaa atc cag cat gtt ttc | 1204 |
| Ala Ile Val Ser Lys Tyr Pro Ile Lys Glu Lys Ile Gln His Val Phe | |
| 140 145 150 | |
| aaa agc ggt tgt gga ttc gat aat gat agc aac aaa ggc ttt gtt tat | 1252 |
| Lys Ser Gly Cys Gly Phe Asp Asn Asp Ser Asn Lys Gly Phe Val Tyr | |
| 155 160 165 | |
| aca aaa ata gag aaa aat ggt aag aac gtt cac gtt atc ggt aca cat | 1300 |
| Thr Lys Ile Glu Lys Asn Gly Lys Asn Val His Val Ile Gly Thr His | |
| 170 175 180 | |
| aca caa tct gaa gat tca cgt tgt ggt gct gga cat gat cga aaa att | 1348 |
| Thr Gln Ser Glu Asp Ser Arg Cys Gly Ala Gly His Asp Arg Lys Ile | |
| 185 190 195 | |
| aga gct gaa caa atg aaa gaa atc agt gac ttt gtt aaa aag aaa aat | 1396 |
| Arg Ala Glu Gln Met Lys Glu Ile Ser Asp Phe Val Lys Lys Lys Asn | |
| 200 205 210 215 | |
| atc cct aaa gat gaa acg gta tat ata ggt ggc gac ctt aat gtc aat | 1444 |
| Ile Pro Lys Asp Glu Thr Val Tyr Ile Gly Gly Asp Leu Asn Val Asn | |
| 220 225 230 | |
| aaa ggc act cca gag ttc aaa gat atg ctt aaa aac ttg aat gta aat | 1492 |
| Lys Gly Thr Pro Glu Phe Lys Asp Met Leu Lys Asn Leu Asn Val Asn | |
| 235 240 245 | |
| gat gtt cta tat gca ggt cat aat agc aca tgg gac cct caa tca aat | 1540 |
| Asp Val Leu Tyr Ala Gly His Asn Ser Thr Trp Asp Pro Gln Ser Asn | |
| 250 255 260 | |

137

Asn Val Tyr Met Leu Ser Thr Val Leu Tyr Pro Asn Trp Gly Gln Tyr
50 55 60

Lys Arg Ala Asp Leu Ile Gly Gln Ser Ser Tyr Ile Lys Asn Asn Asp
65 70 75 80

Val Val Ile Phe Asn Glu Ala Phe Asp Asn Gly Ala Ser Asp Lys Leu
85 90 95

Leu Ser Asn Val Lys Lys Glu Tyr Pro Tyr Gln Thr Pro Val Leu Gly
100 105 110

Arg Ser Gln Ser Gly Trp Asp Lys Thr Glu Gly Ser Tyr Ser Ser Thr
115 120 125

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| gttcgaacac actgatgtga gtggttttct ttatttttaa catgaacaat cagataagtt | 2636 |
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| attaaaatta gacgtgtaaa tgttaaattc taaaacggaa ataccgcta tcctattaaa | 2756 |
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| tcaaccattc taacgcacat actcaaatat agcagctgca cccataccga caccaataca | 2936 |
| catcgtaacc atgccgtaac ggctatcggg acgtctaccc atttcattaa gtaaacgcgc | 2996 |
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Ile Asn Ala Leu Asp Ile Leu Glu Thr Tyr His Tyr Gly Glu Lys Glu
 65 70 75 80

Tyr Lys Asp Ala Lys Asp Lys Leu Met Thr Arg Ile Leu Gly Glu Asp
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Gln Tyr Leu Leu Glu Arg Lys Lys Val Gln Tyr Glu Glu Tyr Lys Lys
 100 105 110

Leu Tyr Gln Lys Tyr Lys Glu Glu Asn Pro Thr Ser Lys Gly Leu Lys
 115 120 125

Leu Lys Thr Phe Asp Gln Tyr Thr Ile Glu Asp Leu Thr Met Arg Glu
 130 135 140

Tyr Asn Glu Leu Thr Glu Ser Leu Lys Ser Ala Val Lys Asp Phe Glu
 145 150 155 160

Lys Asp Val Glu Lys Ile Glu Asn Gln His His Asp Leu Lys Pro Phe
 165 170 175

Thr Asp Glu Met Glu Glu Lys Ala Thr Ser Arg Val Asp Asp Leu Ala
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Asn Lys Ala Tyr Ser Val Tyr Phe Ala Phe Val Arg Asp Thr Gln His
 195 200 205

Lys Thr Glu Ala Leu Glu Leu Lys Ala Lys Val Asp Leu Val Leu Gly
 210 215 220

Asp Glu Asp Lys Pro His Arg Ile Ser Asn Glu Arg Ile Glu Lys Glu
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Met Ile Lys Asp Leu Glu Ser Ile Ile Glu Asp Phe Phe Ile Glu Thr
 245 250 255

Gly Leu Asn Lys Pro Gly Asn Ile Thr Ser Tyr Asp Ser Ser Lys His
 260 265 270

His Tyr Lys Asn His Ser Glu Gly Phe Glu Ala Leu Val Lys Glu Thr
 275 280 285

Arg Glu Ala Val Ala Asn Ala Asp Glu Ser Trp Lys Thr Lys Thr Val
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Lys Lys Tyr Gly Glu Ser Glu Thr Lys Ser Pro Val Val Lys Glu Glu
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Asn Lys Val Glu Asp Pro Gln Ser Pro Lys Phe Asp Asn Gln Gln Glu
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Gln Pro Leu Val Lys Ile Pro Gln Gly Thr Ile Thr Gly Glu Ile Val
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Leu Ser Asp Asn Tyr Thr Gln Pro Thr Thr Pro Asn Pro Ile Leu Glu
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Gly Leu Glu Gly Ser Ser Ser Lys Leu Glu Ile Lys Pro Gln Gly Thr
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Glu Ser Thr Leu Lys Gly Ile Gln Gly Glu Ser Ser Asp Ile Glu Val
 435 440 445

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Pro Gln Phe Asn Lys Thr Pro Lys Tyr Val Lys Tyr Arg Asp Ala Gly
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Pro Arg Phe Asn Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val Thr Thr
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Asn Gln Asp Gly Thr Val Ser Tyr Gly Ala Arg Pro Thr Gln Asn Lys
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Val Ser Tyr Gly Ala Arg Pro Thr Gln Lys Lys Pro Ser Glu Thr Asn
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Ala Tyr Asn Val Thr Thr His Ala Asn Gly Gln Val Ser Tyr Gly Ala
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Arg Pro Thr Tyr Asn Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val Thr
 580 585 590

Thr His Gly Asn Gly Gln Val Ser Tyr Gly Ala Arg Pro Thr Tyr Lys
 595 600 605

Lys Pro Ser Lys Thr Asn Ala Tyr Asn Val Thr Thr His Ala Asn Gly
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Gln Val Ser Tyr Gly Ala Arg Pro Thr Gln Asn Lys Pro Ser Glu Thr
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Asn Ala Tyr Asn Val Thr Thr His Ala Asn Gly Gln Val Ser Tyr Gly
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Ala Arg Pro Thr Gln Asn Lys Pro Ser Glu Thr Asn Ala Tyr Asn Val
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Thr Thr His Gly Asn Gly Gln Val Ser Tyr Gly Ala Arg Pro Thr Tyr
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aagcctttta ctctctgaat aaatctttgg acaaaatttt tattttataa gttgtaaaac 600
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| tatgatgact ttacaaatac atacaggggg tattaat ttg aaa aag aaa aac att | 715 |
| Leu Lys Lys Lys Asn Ile | |
| 1 5 | |
| tat tca att cgt aaa cta ggt gta ggt att gca tct gta act tta ggt | 763 |
| Tyr Ser Ile Arg Lys Leu Gly Val Gly Ile Ala Ser Val Thr Leu Gly | |
| 10 15 20 | |
| aca tta ctt ata tct ggt ggc gta aca cct gct gca aat gct gcg caa | 811 |
| Thr Leu Leu Ile Ser Gly Gly Val Thr Pro Ala Ala Asn Ala Ala Gln | |
| 25 30 35 | |
| cac gat gaa gct caa caa aat gct ttt tat caa gtg tta aat atg cct | 859 |
| His Asp Glu Ala Gln Gln Asn Ala Phe Tyr Gln Val Leu Asn Met Pro | |
| 40 45 50 | |
| aac tta aac gct gat caa cgt aat ggt ttt atc caa agc ctt aaa gat | 907 |
| Asn Leu Asn Ala Asp Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp | |
| 55 60 65 70 | |
| gat cca agc caa agt gct aac gtt tta ggt gaa gct caa aaa ctt aat | 955 |
| Asp Pro Ser Gln Ser Ala Asn Val Leu Gly Glu Ala Gln Lys Leu Asn | |
| 75 80 85 | |
| gac tct caa gct cca aaa gct gat gcg caa caa aat aag ttc aac aaa | 1003 |
| Asp Ser Gln Ala Pro Lys Ala Asp Ala Gln Gln Asn Lys Phe Asn Lys | |
| 90 95 100 | |
| gat caa caa agc gcc ttc tat gaa atc ttg aac atg cct aac tta aac | 1051 |
| Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn | |
| 105 110 115 | |
| gaa gag caa cgc aat ggt ttc att caa agt ctt aaa gac gat cca agc | 1099 |
| Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser | |
| 120 125 130 | |
| caa agc act aac gtt tta ggt gaa gct aaa aaa tta aac gaa tct caa | 1147 |
| Gln Ser Thr Asn Val Leu Gly Glu Ala Lys Lys Leu Asn Glu Ser Gln | |
| 135 140 145 150 | |
| gca ccg aaa gct gac aac aat ttc aac aaa gaa caa caa aat gct ttc | 1195 |
| Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys Glu Gln Gln Asn Ala Phe | |
| 155 160 165 | |
| tat gaa atc ttg aac atg cct aac ttg aac gaa gaa caa cgc aat ggt | 1243 |
| Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly | |
| 170 175 180 | |
| ttc atc caa agc tta aaa gat gac cca agt caa agt gct aac ctt tta | 1291 |
| Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu | |
| 185 190 195 | |
| gca gaa gct aaa aag tta aat gaa tct caa gca ccg aaa gct gat aac | 1339 |
| Ala Glu Ala Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn | |
| 200 205 210 | |

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| aaa ttc aac aaa gaa caa caa aat gct ttc tat gaa atc tta cat tta | 1387 |
| Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu | |
| 215 220 225 230 | |
| cct aac tta aat gaa gaa caa cgc aat ggt ttc atc caa agc tta aaa | 1435 |
| Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys | |
| 235 240 245 | |
| gat gac cca agc caa agc gct aac ctt tta gca gaa gct aaa aag cta | 1483 |
| Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu Ala Glu Ala Lys Lys Leu | |
| 250 255 260 | |
| aat gat gca caa gca cca aaa gct gac aac aaa ttc aac aaa gaa caa | 1531 |
| Asn Asp Ala Gln Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln | |
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| caa aat gct ttc tat gaa att tta cat tta cct aac tta act gaa gaa | 1579 |
| Gln Asn Ala Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Thr Glu Glu | |
| 280 285 290 | |
| caa cgt aac ggc ttc atc caa agc ctt aaa gac gat cct tca gtg agc | 1627 |
| Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Val Ser | |
| 295 300 305 310 | |
| aaa gaa att tta gca gaa gct aaa aag cta aac gat gct caa gca cca | 1675 |
| Lys Glu Ile Leu Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro | |
| 315 320 325 | |
| aaa gag gaa gac aac aac aag cct ggt aaa gaa gac ggc aac aaa cct | 1723 |
| Lys Glu Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro | |
| 330 335 340 | |
| ggt aaa gaa gac ggc aac aaa cct ggt aaa gaa gac aac aaa aaa cct | 1771 |
| Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Asn Lys Lys Pro | |
| 345 350 355 | |
| ggc aaa gaa gac ggc aac aaa cct ggt aaa gaa gac aac aaa aaa cct | 1819 |
| Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Asn Lys Lys Pro | |
| 360 365 370 | |
| ggc aaa gaa gat ggc aac aaa cct ggt aaa gaa gac ggc aac aag cct | 1867 |
| Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro | |
| 375 380 385 390 | |
| ggt aaa gaa gat ggc aac aag cct ggt aaa gaa gat ggc aac aag cct | 1915 |
| Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro | |
| 395 400 405 | |
| ggt aaa gaa gac ggc aac gga gta cat gtc gtt aaa cct ggt gat aca | 1963 |
| Gly Lys Glu Asp Gly Asn Gly Val His Val Val Lys Pro Gly Asp Thr | |
| 410 415 420 | |
| gta aat gac att gca aaa gca aac ggc act act gct gac aaa att gct | 2011 |
| Val Asn Asp Ile Ala Lys Ala Asn Gly Thr Thr Ala Asp Lys Ile Ala | |
| 425 430 435 | |

Asn Met Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser
 115 120 125

Leu Lys Asp Asp Pro Ser Gln Ser Thr Asn Val Leu Gly Glu Ala Lys
 130 135 140

Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys
 145 150 155 160

Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn
 165 170 175

Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser
 180 185 190

Gln Ser Ala Asn Leu Leu Ala Glu Ala Lys Lys Leu Asn Glu Ser Gln
 195 200 205

Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe
 210 215 220

Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly
 225 230 235 240

Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu
 245 250 255

Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ala Asp Asn
 260 265 270

Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu
 275 280 285

Pro Asn Leu Thr Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys
 290 295 300

Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Ala Glu Ala Lys Lys Leu
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Asn Asp Ala Gln Ala Pro Lys Glu Glu Asp Asn Asn Lys Pro Gly Lys
 325 330 335

165

Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu
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Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro
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| Tyr Gly Lys Ile Ile Phe Val Leu Leu Ser Ala Ile Val Ser Ile | |
| 5 10 15 | |
| tca gca tca agt acc act ggt gtg gca atg cac act tca acc tct tct | 154 |
| Ser Ala Ser Ser Thr Thr Gly Val Ala Met His Thr Ser Thr Ser Ser | |
| 20 25 30 | |
| tca gtc aca aag agt tac atc tca tca cag aca aat gat acg cac aaa | 202 |
| Ser Val Thr Lys Ser Tyr Ile Ser Ser Gln Thr Asn Asp Thr His Lys | |
| 35 40 45 | |
| cgg gac aca tat gca gcc act cct aga gct cat gaa gtt tca gaa att | 250 |
| Arg Asp Thr Tyr Ala Ala Thr Pro Arg Ala His Glu Val Ser Glu Ile | |
| 50 55 60 65 | |
| tct gtt aga act gtt tac cct cca gaa gag gaa acc gga gaa agg gta | 298 |
| Ser Val Arg Thr Val Tyr Pro Pro Glu Glu Glu Thr Gly Glu Arg Val | |
| 70 75 80 | |
| caa ctt gcc cat cat ttc tct gaa cca gag ata aca ctc att att ttt | 346 |
| Gln Leu Ala His His Phe Ser Glu Pro Glu Ile Thr Leu Ile Ile Phe | |
| 85 90 95 | |
| ggg gtg atg gct ggt gtt att gga acg atc ctc tta att tct tac ggt | 394 |
| Gly Val Met Ala Gly Val Ile Gly Thr Ile Leu Leu Ile Ser Tyr Gly | |
| 100 105 110 | |
| att cgc cga ctg ata aag aaa agc cca tct gat gta aaa cct ctc ccc | 442 |
| Ile Arg Arg Leu Ile Lys Lys Ser Pro Ser Asp Val Lys Pro Leu Pro | |
| 115 120 125 | |
| tca cct gac aca gac gtg cct tta agt tct gtt gaa ata gaa aat cca | 490 |
| Ser Pro Asp Thr Asp Val Pro Leu Ser Ser Val Glu Ile Glu Asn Pro | |
| 130 135 140 145 | |
| gag aca agt gat caa tga gaatctgttc accaaaccaa atgtggaaag | 538 |
| Glu Thr Ser Asp Gln | |
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| aacacaaaga agacataaga cttcagtc aa gtgaaaaatt aacatgtgga ctggacactc | 598 |
| caataaa'tta tatacctgcc taagtgttac aatttcagaa tgcaattttc attataatga | 658 |
| gttccagtga ctcaatgatg gggaaaaaaaa tctctgtc ttaatatattc aagataaaga | 718 |
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| aattctgac caaaacttta gttgaattca tctacgtttg tttaatatata acttaaccta | 838 |
| ttctattgta ttataatgat gattctgtca aatgaaaggc ttgaaatacc tagatgaagt | 898 |
| ttagattttc ttctatttgt aaacttttga gtctggtttc attgttttaa ataaattaag | 958 |
| gggacactaa agtcctatca ttcatctct cattctgaac aggcaagata taatattaca | 1018 |

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| cacacaaaca cacacattta tcatttaatg cataaatcaa cacaaaaggt tttcccatta | 1138 |
| atatgaaata ttacatatat ataagtgcc tttttaaata aatttgtcta acagtagaac | 1198 |
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| gagttatccc ggagaaggaa aaagaactta cgacctttct ttataacaga aagctcaact | 1318 |
| ctaaattcaa caagatgtgc aaaccggaca tgcagggtgaa tattttaata gggtactata | 1378 |
| aggttctcaa ttaaattctt taatctgtcc agtcccagtt tctcttatta ataaaacttt | 1438 |
| ggaaattgct ttaaaccatt taaaggaaat ttctagatat agaaactaaa ggactgtgac | 1498 |
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| gggtgagatt aacctttttg ctaaagtaat ttacaagtca aagacaggaa gagatcagag | 1978 |
| tgaatgtgcc ttcttaacca gagctacaga atttagtgaa taattaaagt acaaactgct | 2038 |
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| ccctcccaac actgttaciaa tggcaattaa atttcaacia aggttccaga ggtgacattc | 2458 |
| gaatcagcaa tgaaattttc atagttaaatt ttggtattcg tgggggaaga aatgaccatt | 2518 |
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<222> (104)..(4474)

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                               Met Arg Leu Pro
                               1

ctg ctc ctg gtt ttt gcc tct gtc att ccg ggt gct gtt ctc cta ctg      163
Leu Leu Leu Val Phe Ala Ser Val Ile Pro Gly Ala Val Leu Leu Leu
5                               10                               15                               20

gac acc agg caa ttt tta atc tat aat gaa gat cac aag cgc tgc gtg      211
Asp Thr Arg Gln Phe Leu Ile Tyr Asn Glu Asp His Lys Arg Cys Val
                               25                               30                               35

gat gca gtg agt ccc agt gcc gtc caa acc gca gct tgc aac cag gat      259
Asp Ala Val Ser Pro Ser Ala Val Gln Thr Ala Ala Cys Asn Gln Asp
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gcc gaa tca cag aaa ttc cga tgg gtg tcc gaa tct cag att atg agt      307
Ala Glu Ser Gln Lys Phe Arg Trp Val Ser Glu Ser Gln Ile Met Ser
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gtt gca ttt aaa tta tgc ctg gga gtg cca tca aaa aca gac tgg gtt      355
Val Ala Phe Lys Leu Cys Leu Gly Val Pro Ser Lys Thr Asp Trp Val
70                               75                               80

gct atc act ctc tat gcc tgt gac tca aaa agt gaa ttt cag aaa tgg      403
Ala Ile Thr Leu Tyr Ala Cys Asp Ser Lys Ser Glu Phe Gln Lys Trp
85                               90                               95                               100

gag tgc aaa aat gac aca ctt ttg ggg atc aaa gga gaa gat tta ttt      451
Glu Cys Lys Asn Asp Thr Leu Leu Gly Ile Lys Gly Glu Asp Leu Phe
                               105                               110                               115

ttt aac tac ggc aac aga caa gaa aag aat att atg ctc tac aag gga      499
Phe Asn Tyr Gly Asn Arg Gln Glu Lys Asn Ile Met Leu Tyr Lys Gly
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tcg ggt tta tgg agc agg tgg aag atc tat gga acc aca gac aat ctg      547
Ser Gly Leu Trp Ser Arg Trp Lys Ile Tyr Gly Thr Thr Asp Asn Leu
135                               140                               145

tgc tcc aga ggt tat gaa gcc atg tat acg cta cta ggc aat gcc aat      595
Cys Ser Arg Gly Tyr Glu Ala Met Tyr Thr Leu Leu Gly Asn Ala Asn
150                               155                               160

gga gca acc tgt gca ttc ccg ttc aag ttt gaa aac aag tgg tac gca      643
Gly Ala Thr Cys Ala Phe Pro Phe Lys Phe Glu Asn Lys Trp Tyr Ala
165                               170                               175                               180

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| ttt gag ggc agt gaa agc tta tgg aat aaa gac ccg ctg acc agc gtt Phe Glu Gly Ser Glu Ser Leu Trp Asn Lys Asp Pro Leu Thr Ser Val 215 220 225 | 787 |
| tcc tac cag ata aac tcc aaa tcc gct tta acg tgg cac caa gcg agg Ser Tyr Gln Ile Asn Ser Lys Ser Ala Leu Thr Trp His Gln Ala Arg 230 235 240 | 835 |
| aaa agc tgc caa caa cag aac gct gag ctc ctg agc atc aca gag ata Lys Ser Cys Gln Gln Gln Asn Ala Glu Leu Leu Ser Ile Thr Glu Ile 245 250 255 260 | 883 |
| cat gag caa aca tac ctg aca gga tta acc agt tcc ttg acc tca gga His Glu Gln Thr Tyr Leu Thr Gly Leu Thr Ser Ser Leu Thr Ser Gly 265 270 275 | 931 |
| ctc tgg att gga ctt aac agt ctg agc ttc aac agc ggt tgg cag tgg Leu Trp Ile Gly Leu Asn Ser Leu Ser Phe Asn Ser Gly Trp Gln Trp 280 285 290 | 979 |
| agt gac cgc agt cct ttc cga tat ttg aac tgg tta cca gga agt cca Ser Asp Arg Ser Pro Phe Arg Tyr Leu Asn Trp Leu Pro Gly Ser Pro 295 300 305 | 1027 |
| tca gct gaa cct gga aaa agc tgt gtg tca cta aat cct gga aaa aat Ser Ala Glu Pro Gly Lys Ser Cys Val Ser Leu Asn Pro Gly Lys Asn 310 315 320 | 1075 |
| gct aaa tgg gaa aat ctg gaa tgt gtt cag aaa ctg ggc tat att tgc Ala Lys Trp Glu Asn Leu Glu Cys Val Gln Lys Leu Gly Tyr Ile Cys 325 330 335 340 | 1123 |
| aaa aag ggc aac acc act tta aat tct ttt gtt att ccc tca gaa agt Lys Lys Gly Asn Thr Thr Leu Asn Ser Phe Val Ile Pro Ser Glu Ser 345 350 355 | 1171 |
| gat gtg cct act cac tgt cct agt cag tgg tgg ccg tat gcc ggt cac Asp Val Pro Thr His Cys Pro Ser Gln Trp Trp Pro Tyr Ala Gly His 360 365 370 | 1219 |
| tgt tac aag att cac aga gat gag aaa aaa atc cag agg gat gct ctg Cys Tyr Lys Ile His Arg Asp Glu Lys Lys Ile Gln Arg Asp Ala Leu 375 380 385 | 1267 |
| acc acc tgc agg aag gaa ggc ggt gac ctc aca agt atc cac acc atc Thr Thr Cys Arg Lys Glu Gly Gly Asp Leu Thr Ser Ile His Thr Ile 390 395 400 | 1315 |

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|---|------|
| gag gaa ttg gac ttt att atc tcc cag cta gga tat gag cca aat gac | 1363 |
| Glu Glu Leu Asp Phe Ile Ile Ser Gln Leu Gly Tyr Glu Pro Asn Asp | |
| 405 410 415 420 | |
| gaa ttg tgg atc ggc tta aat gac att aag att caa atg tac ttt gag | 1411 |
| Glu Leu Trp Ile Gly Leu Asn Asp Ile Lys Ile Gln Met Tyr Phe Glu | |
| 425 430 435 | |
| tgg agt gat ggg acc cct gta acg ttt acc aaa tgg ctt cgt gga gaa | 1459 |
| Trp Ser Asp Gly Thr Pro Val Thr Phe Thr Lys Trp Leu Arg Gly Glu | |
| 440 445 450 | |
| cca agc cat gaa aac aac aga cag gag gat tgt gtg gtg atg aaa ggc | 1507 |
| Pro Ser His Glu Asn Asn Arg Gln Glu Asp Cys Val Val Met Lys Gly | |
| 455 460 465 | |
| aag gat ggg tac tgg gca gat cgg ggc tgt gag tgg cct ctt ggc tac | 1555 |
| Lys Asp Gly Tyr Trp Ala Asp Arg Gly Cys Glu Trp Pro Leu Gly Tyr | |
| 470 475 480 | |
| atc tgc aag atg aaa tca cga agc caa ggt cca gaa ata gtg gaa gtc | 1603 |
| Ile Cys Lys Met Lys Ser Arg Ser Gln Gly Pro Glu Ile Val Glu Val | |
| 485 490 495 500 | |
| gaa aaa ggc tgc agg aaa ggc tgg aaa aaa cat cac ttt tac tgc tat | 1651 |
| Glu Lys Gly Cys Arg Lys Gly Trp Lys Lys His His Phe Tyr Cys Tyr | |
| 505 510 515 | |
| atg att gga cat acg ctt tca aca ttt gca gaa gca aac caa acc tgt | 1699 |
| Met Ile Gly His Thr Leu Ser Thr Phe Ala Glu Ala Asn Gln Thr Cys | |
| 520 525 530 | |
| aat aat gag aat gct tat tta aca act att gaa gac aga tat gaa caa | 1747 |
| Asn Asn Glu Asn Ala Tyr Leu Thr Thr Ile Glu Asp Arg Tyr Glu Gln | |
| 535 540 545 | |
| gcc ttc ctg act agt ttc gtt ggc tta agg cct gaa aaa tat ttc tgg | 1795 |
| Ala Phe Leu Thr Ser Phe Val Gly Leu Arg Pro Glu Lys Tyr Phe Trp | |
| 550 555 560 | |
| aca gga ctt tca gat ata caa acc aaa ggg act ttt cag tgg acc atc | 1843 |
| Thr Gly Leu Ser Asp Ile Gln Thr Lys Gly Thr Phe Gln Trp Thr Ile | |
| 565 570 575 580 | |
| gag gaa gag gtt cgg ttc acc cac tgg aat tca gat atg cca ggg cga | 1891 |
| Glu Glu Glu Val Arg Phe Thr His Trp Asn Ser Asp Met Pro Gly Arg | |
| 585 590 595 | |
| aag cca ggg tgt gtt gcc atg aga acc ggg att gca ggg ggc tta tgg | 1939 |
| Lys Pro Gly Cys Val Ala Met Arg Thr Gly Ile Ala Gly Gly Leu Trp | |
| 600 605 610 | |
| gat gtt ttg aaa tgt gat gaa aag gca aaa ttt gtg tgc aag cac tgg | 1987 |
| Asp Val Leu Lys Cys Asp Glu Lys Ala Lys Phe Val Cys Lys His Trp | |
| 615 620 625 | |

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|---|------|
| gca gaa gga gta acc cac cca ccg aag ccc acg acg act ccc gaa ccc | 2035 |
| Ala Glu Gly Val Thr His Pro Pro Lys Pro Thr Thr Pro Glu Pro | |
| 630 635 640 | |
| aaa tgt ccg gag gat tgg ggc gcc agc agt aga aca agc ttg tgt ttc | 2083 |
| Lys Cys Pro Glu Asp Trp Gly Ala Ser Ser Arg Thr Ser Leu Cys Phe | |
| 645 650 655 660 | |
| aag ctg tat gca aaa gga aaa cat gag aag aaa acg tgg ttt gaa tct | 2131 |
| Lys Leu Tyr Ala Lys Gly Lys His Glu Lys Lys Thr Trp Phe Glu Ser | |
| 665 670 675 | |
| cga gat ttt tgt cga gct ctg ggt gga gac tta gct agc atc aat aac | 2179 |
| Arg Asp Phe Cys Arg Ala Leu Gly Gly Asp Leu Ala Ser Ile Asn Asn | |
| 680 685 690 | |
| aaa gag gaa cag caa aca ata tgg cga tta ata aca gct agt gga agc | 2227 |
| Lys Glu Glu Gln Gln Thr Ile Trp Arg Leu Ile Thr Ala Ser Gly Ser | |
| 695 700 705 | |
| tac cac aaa ctg ttt tgg ttg gga ttg aca tat gga agc cct tca gaa | 2275 |
| Tyr His Lys Leu Phe Trp Leu Gly Leu Thr Tyr Gly Ser Pro Ser Glu | |
| 710 715 720 | |
| ggt ttt act tgg agt gat ggt tct cct gtt tca tat gaa aac tgg gct | 2323 |
| Gly Phe Thr Trp Ser Asp Gly Ser Pro Val Ser Tyr Glu Asn Trp Ala | |
| 725 730 735 740 | |
| tat gga gaa cct aat aat tat caa aat gtt gaa tac tgt ggt gag ctg | 2371 |
| Tyr Gly Glu Pro Asn Asn Tyr Gln Asn Val Glu Tyr Cys Gly Glu Leu | |
| 745 750 755 | |
| aaa ggt gac cct act atg tct tgg aat gat att aat tgt gaa cac ctt | 2419 |
| Lys Gly Asp Pro Thr Met Ser Trp Asn Asp Ile Asn Cys Glu His Leu | |
| 760 765 770 | |
| aac aac tgg att tgc cag ata caa aaa gga caa aca cca aaa cct gag | 2467 |
| Asn Asn Trp Ile Cys Gln Ile Gln Lys Gly Gln Thr Pro Lys Pro Glu | |
| 775 780 785 | |
| cca aca cca gct cct caa gac aat cca cca gtt act gaa gat ggg tgg | 2515 |
| Pro Thr Pro Ala Pro Gln Asp Asn Pro Pro Val Thr Glu Asp Gly Trp | |
| 790 795 800 | |
| ggt att tac aaa gac tac cag tat tat ttc agc aaa gag aag gaa acc | 2563 |
| Val Ile Tyr Lys Asp Tyr Gln Tyr Tyr Phe Ser Lys Glu Lys Glu Thr | |
| 805 810 815 820 | |
| atg gac aat gcg cga gcg ttt tgc aag agg aat ttt ggt gat ctt gtt | 2611 |
| Met Asp Asn Ala Arg Ala Phe Cys Lys Arg Asn Phe Gly Asp Leu Val | |
| 825 830 835 | |
| tct att caa agt gaa agt gaa aag aag ttt cta tgg aaa tat gta aac | 2659 |
| Ser Ile Gln Ser Glu Ser Glu Lys Lys Phe Leu Trp Lys Tyr Val Asn | |
| 840 845 850 | |

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|---|------|
| aga aat gat gca cag tct gca tat ttt att ggt tta ttg atc agc ttg | 2707 |
| Arg Asn Asp Ala Gln Ser Ala Tyr Phe Ile Gly Leu Leu Ile Ser Leu | |
| 855 860 865 | |
| gat aaa aag ttt gct tgg atg gat gga agc aaa gtg gat tac gtg tct | 2755 |
| Asp Lys Lys Phe Ala Trp Met Asp Gly Ser Lys Val Asp Tyr Val Ser | |
| 870 875 880 | |
| tgg gcc aca ggt gaa ccc aat ttt gca aat gaa gat gaa aac tgt gtg | 2803 |
| Trp Ala Thr Gly Glu Pro Asn Phe Ala Asn Glu Asp Glu Asn Cys Val | |
| 885 890 895 900 | |
| acc atg tat tca aat tca ggg ttt tgg aat gac att aac tgt ggc tat | 2851 |
| Thr Met Tyr Ser Asn Ser Gly Phe Trp Asn Asp Ile Asn Cys Gly Tyr | |
| 905 910 915 | |
| cca aac gcc ttc att tgc cag cga cat aac agt agt atc aat gct acc | 2899 |
| Pro Asn Ala Phe Ile Cys Gln Arg His Asn Ser Ser Ile Asn Ala Thr | |
| 920 925 930 | |
| aca gtt atg cct acc atg ccc tcg gtc cca tca ggg tgc aag gaa ggt | 2947 |
| Thr Val Met Pro Thr Met Pro Ser Val Pro Ser Gly Cys Lys Glu Gly | |
| 935 940 945 | |
| tgg aat ttc tac agc aac aag tgt ttc aaa atc ttt gga ttt atg gaa | 2995 |
| Trp Asn Phe Tyr Ser Asn Lys Cys Phe Lys Ile Phe Gly Phe Met Glu | |
| 950 955 960 | |
| gaa gaa aga aaa aat tgg caa gag gca cga aaa gct tgt ata ggc ttt | 3043 |
| Glu Glu Arg Lys Asn Trp Gln Glu Ala Arg Lys Ala Cys Ile Gly Phe | |
| 965 970 975 980 | |
| gga ggg aat ctg gtc tcc ata caa aat gaa aaa gag caa gca ttt ctt | 3091 |
| Gly Gly Asn Leu Val Ser Ile Gln Asn Glu Lys Glu Gln Ala Phe Leu | |
| 985 990 995 | |
| acc tat cac atg aag gac tcc act ttc agt gcc tgg act ggg ctg | 3136 |
| Thr Tyr His Met Lys Asp Ser Thr Phe Ser Ala Trp Thr Gly Leu | |
| 1000 1005 1010 | |
| aat gat gtc aat tca gaa cac acg ttc ctt tgg acg gat gga cga | 3181 |
| Asn Asp Val Asn Ser Glu His Thr Phe Leu Trp Thr Asp Gly Arg | |
| 1015 1020 1025 | |
| gga gtc cat tac aca aac tgg ggg aaa ggt tac cct ggt gga aga | 3226 |
| Gly Val His Tyr Thr Asn Trp Gly Lys Gly Tyr Pro Gly Gly Arg | |
| 1030 1035 1040 | |
| aga agc agt ctt tct tat gaa gat gct gac tgt gtt gtt att att | 3271 |
| Arg Ser Ser Leu Ser Tyr Glu Asp Ala Asp Cys Val Val Ile Ile | |
| 1045 1050 1055 | |
| gga ggt gca tca aat gaa gca gga aaa tgg atg gat gat acc tgc | 3316 |
| Gly Gly Ala Ser Asn Glu Ala Gly Lys Trp Met Asp Asp Thr Cys | |
| 1060 1065 1070 | |

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|-----------------|---------------------|-------------------------|------|
| gac agt aaa cga | ggc tac ata tgc cag | aca cga tcc gac cct tcc | 3361 |
| Asp Ser Lys Arg | Gly Tyr Ile Cys Gln | Thr Arg Ser Asp Pro Ser | |
| 1075 | 1080 | 1085 | |
| ttg act aat cct | cca gca acg att caa | aca gat ggc ttt gtt aaa | 3406 |
| Leu Thr Asn Pro | Pro Ala Thr Ile Gln | Thr Asp Gly Phe Val Lys | |
| 1090 | 1095 | 1100 | |
| tat ggc aaa agc | agc tat tca ctc atg | aga caa aaa ttt caa tgg | 3451 |
| Tyr Gly Lys Ser | Ser Tyr Ser Leu Met | Arg Gln Lys Phe Gln Trp | |
| 1105 | 1110 | 1115 | |
| cat gaa gcg gag | aca tac tgc aag ctt | cac aat tcc ctt ata gcc | 3496 |
| His Glu Ala Glu | Thr Tyr Cys Lys Leu | His Asn Ser Leu Ile Ala | |
| 1120 | 1125 | 1130 | |
| agc att ctg gat | ccc tac agt aat gca | ttt gcg tgg ctg cag atg | 3541 |
| Ser Ile Leu Asp | Pro Tyr Ser Asn Ala | Phe Ala Trp Leu Gln Met | |
| 1135 | 1140 | 1145 | |
| gaa aca tct aat | gaa cgt gtg tgg atc | gcc ctg aac agt aac ttg | 3586 |
| Glu Thr Ser Asn | Glu Arg Val Trp Ile | Ala Leu Asn Ser Asn Leu | |
| 1150 | 1155 | 1160 | |
| act gat aat caa | tac act tgg act gat | aag tgg agg gtg agg tac | 3631 |
| Thr Asp Asn Gln | Tyr Thr Trp Thr Asp | Lys Trp Arg Val Arg Tyr | |
| 1165 | 1170 | 1175 | |
| act aac tgg gct | gct gat gag ccc aaa | ttg aaa tca gca tgt gtt | 3676 |
| Thr Asn Trp Ala | Ala Asp Glu Pro Lys | Leu Lys Ser Ala Cys Val | |
| 1180 | 1185 | 1190 | |
| tat ctg gat ctt | gat ggc tac tgg aag | aca gca cat tgc aat gaa | 3721 |
| Tyr Leu Asp Leu | Asp Gly Tyr Trp Lys | Thr Ala His Cys Asn Glu | |
| 1195 | 1200 | 1205 | |
| agt ttt tac ttt | ctc tgt aaa aga tca | gat gaa atc cct gct act | 3766 |
| Ser Phe Tyr Phe | Leu Cys Lys Arg Ser | Asp Glu Ile Pro Ala Thr | |
| 1210 | 1215 | 1220 | |
| gaa ccc cca caa | ctg cct ggc aga tgc | ccg gag tca gat cac aca | 3811 |
| Glu Pro Pro Gln | Leu Pro Gly Arg Cys | Pro Glu Ser Asp His Thr | |
| 1225 | 1230 | 1235 | |
| gca tgg att cct | ttc cat ggt cac tgt | tac tat att gag tcc tca | 3856 |
| Ala Trp Ile Pro | Phe His Gly His Cys | Tyr Tyr Ile Glu Ser Ser | |
| 1240 | 1245 | 1250 | |
| tat aca aga aac | tgg ggc caa gct tct | ctg gaa tgt ctt cga atg | 3901 |
| Tyr Thr Arg Asn | Trp Gly Gln Ala Ser | Leu Glu Cys Leu Arg Met | |
| 1255 | 1260 | 1265 | |
| ggt tcc tct ctg | gtt tcc att gaa agt | gct gca gaa tcc agt ttt | 3946 |
| Gly Ser Ser Leu | Val Ser Ile Glu Ser | Ala Ala Glu Ser Ser Phe | |
| 1270 | 1275 | 1280 | |

| | |
|--|------|
| ctg tca tat atg gtt gag cca ctt aaa agt aaa acc aat ttt tgg | 3991 |
| Leu Ser Tyr Arg Val Glu Pro Leu Lys Ser Lys Thr Asn Phe Trp | |
| 1285 1290 1295 | |
| ata gga ttg ttc aga aat gtt gaa ggg acg tgg ctg tgg ata aat | 4036 |
| Ile Gly Leu Phe Arg Asn Val Glu Gly Thr Trp Leu Trp Ile Asn | |
| 1300 1305 1310 | |
| aac agt ccg gtc tcc ttt gtc aac tgg aac aca gga gat ccc tct | 4081 |
| Asn Ser Pro Val Ser Phe Val Asn Trp Asn Thr Gly Asp Pro Ser | |
| 1315 1320 1325 | |
| ggg gaa cgg aat gat tgt gta gct tta cat gcg tct tct ggg ttt | 4126 |
| Gly Glu Arg Asn Asp Cys Val Ala Leu His Ala Ser Ser Gly Phe | |
| 1330 1335 1340 | |
| tgg agt aat att cac tgt tct tcc tac aaa gga tat att tgt aaa | 4171 |
| Trp Ser Asn Ile His Cys Ser Ser Tyr Lys Gly Tyr Ile Cys Lys | |
| 1345 1350 1355 | |
| aga cca aaa att att gat gct aaa cct act cat gaa tta ctt aca | 4216 |
| Arg Pro Lys Ile Ile Asp Ala Lys Pro Thr His Glu Leu Leu Thr | |
| 1360 1365 1370 | |
| aca aaa gct gac aca agg aag atg gac cct tct aaa ccg tct tcc | 4261 |
| Thr Lys Ala Asp Thr Arg Lys Met Asp Pro Ser Lys Pro Ser Ser | |
| 1375 1380 1385 | |
| aac gtg gcc gga gta gtc atc att gtg atc ctc ctg att tta acg | 4306 |
| Asn Val Ala Gly Val Val Ile Ile Val Ile Leu Leu Ile Leu Thr | |
| 1390 1395 1400 | |
| ggg gct ggc ctt gcc gcc tat ttc ttt tat aag aaa aga cgt gtg | 4351 |
| Gly Ala Gly Leu Ala Ala Tyr Phe Phe Tyr Lys Lys Arg Arg Val | |
| 1405 1410 1415 | |
| cac cta cct caa gag ggc gcc ttt gaa aac act ctg tat ttt aac | 4396 |
| His Leu Pro Gln Glu Gly Ala Phe Glu Asn Thr Leu Tyr Phe Asn | |
| 1420 1425 1430 | |
| agt cag tca agc cca gga act agt gat atg aaa gat ctc gtg ggc | 4441 |
| Ser Gln Ser Ser Pro Gly Thr Ser Asp Met Lys Asp Leu Val Gly | |
| 1435 1440 1445 | |
| aat att gaa cag aat gaa cac tcg gtc atc tag tacctcaatg | 4484 |
| Asn Ile Glu Gln Asn Glu His Ser Val Ile | |
| 1450 1455 | |
| cgattctgag atattttgaat ttcataaaat tgtaactgaa attttaaatt ttagttcaa | 4544 |
| tgtgattgtt ttcttttaaaa tgagtactga attgtactgg tctgtccttt tttcctttgc | 4604 |
| ctaattgaag aaataattgc ttgttttcta gcctggcaag atattttcat aaaagaggga | 4664 |
| taacaatgct gattactacc ttttaaaata ttttagataa atgcacagca ccacagcacc | 4724 |

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|------------|-------------|-------------|-------------|-------------|------------|------|
| acatctaagc | attagtgatg | ggtagctgat | gtcagcttca | tgtggatttt | aagcactcta | 4784 |
| gaaacaatga | agcttcttgg | catattttaa | ggagctccca | aaatgtgtta | cctattaaat | 4844 |
| tgtaactcag | caagtagaag | accatttgaa | aagtcaggta | caaatttcct | caagtggcat | 4904 |
| aaaaatgtag | tcagttttct | cttttaccag | tttttatttc | caactccaatt | atttagaact | 4964 |
| ttatttgtac | atgtgcagaa | gaataaggca | gctgagaatc | ttgtttcccc | caagagagtt | 5024 |
| ttacaggctg | agtgttgcaa | atgtgttctt | tgtcctgtta | tatgtatatc | aggaatacaa | 5084 |
| ggatgtgaaa | taaaactgta | aatttgcata | actggatgta | cttagataat | gtgaaataaa | 5144 |
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<212> PRT
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Val Leu Leu Leu Asp Thr Arg Gln Phe Leu Ile Tyr Asn Glu Asp His
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Lys Arg Cys Val Asp Ala Val Ser Pro Ser Ala Val Gln Thr Ala Ala
35 40 45

Cys Asn Gln Asp Ala Glu Ser Gln Lys Phe Arg Trp Val Ser Glu Ser
50 55 60

Gln Ile Met Ser Val Ala Phe Lys Leu Cys Leu Gly Val Pro Ser Lys
65 70 75 80

Thr Asp Trp Val Ala Ile Thr Leu Tyr Ala Cys Asp Ser Lys Ser Glu
85 90 95

Phe Gln Lys Trp Glu Cys Lys Asn Asp Thr Leu Leu Gly Ile Lys Gly
100 105 110

Glu Asp Leu Phe Phe Asn Tyr Gly Asn Arg Gln Glu Lys Asn Ile Met
115 120 125

Leu Tyr Lys Gly Ser Gly Leu Trp Ser Arg Trp Lys Ile Tyr Gly Thr
 130 135 140

Thr Asp Asn Leu Cys Ser Arg Gly Tyr Glu Ala Met Tyr Thr Leu Leu
 145 150 155 160

Gly Asn Ala Asn Gly Ala Thr Cys Ala Phe Pro Phe Lys Phe Glu Asn
 165 170 175

Lys Trp Tyr Ala Asp Cys Thr Ser Ala Gly Arg Ser Asp Gly Trp Leu
 180 185 190

Trp Cys Gly Thr Thr Thr Asp Tyr Asp Thr Asp Lys Leu Phe Gly Tyr
 195 200 205

Cys Pro Leu Lys Phe Glu Gly Ser Glu Ser Leu Trp Asn Lys Asp Pro
 210 215 220

Leu Thr Ser Val Ser Tyr Gln Ile Asn Ser Lys Ser Ala Leu Thr Trp
 225 230 235 240

His Gln Ala Arg Lys Ser Cys Gln Gln Gln Asn Ala Glu Leu Leu Ser
 245 250 255

Ile Thr Glu Ile His Glu Gln Thr Tyr Leu Thr Gly Leu Thr Ser Ser
 260 265 270

Leu Thr Ser Gly Leu Trp Ile Gly Leu Asn Ser Leu Ser Phe Asn Ser
 275 280 285

Gly Trp Gln Trp Ser Asp Arg Ser Pro Phe Arg Tyr Leu Asn Trp Leu
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Pro Gly Ser Pro Ser Ala Glu Pro Gly Lys Ser Cys Val Ser Leu Asn
 305 310 315 320

Pro Gly Lys Asn Ala Lys Trp Glu Asn Leu Glu Cys Val Gln Lys Leu
 325 330 335

Gly Tyr Ile Cys Lys Lys Gly Asn Thr Thr Leu Asn Ser Phe Val Ile
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Pro Ser Glu Ser Asp Val Pro Thr His Cys Pro Ser Gln Trp Trp Pro
355 360 365

Tyr Ala Gly His Cys Tyr Lys Ile His Arg Asp Glu Lys Lys Ile Gln
370 375 380

Arg Asp Ala Leu Thr Thr Cys Arg Lys Glu Gly Gly Asp Leu Thr Ser
385 390 395 400

Ile His Thr Ile Glu Glu Leu Asp Phe Ile Ile Ser Gln Leu Gly Tyr
405 410 415

Glu Pro Asn Asp Glu Leu Trp Ile Gly Leu Asn Asp Ile Lys Ile Gln
420 425 430

Met Tyr Phe Glu Trp Ser Asp Gly Thr Pro Val Thr Phe Thr Lys Trp
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Leu Arg Gly Glu Pro Ser His Glu Asn Asn Arg Gln Glu Asp Cys Val
450 455 460

Val Met Lys Gly Lys Asp Gly Tyr Trp Ala Asp Arg Gly Cys Glu Trp
465 470 475 480

Pro Leu Gly Tyr Ile Cys Lys Met Lys Ser Arg Ser Gln Gly Pro Glu
485 490 495

Ile Val Glu Val Glu Lys Gly Cys Arg Lys Gly Trp Lys Lys His His
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Phe Tyr Cys Tyr Met Ile Gly His Thr Leu Ser Thr Phe Ala Glu Ala
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Asn Gln Thr Cys Asn Asn Glu Asn Ala Tyr Leu Thr Thr Ile Glu Asp
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Arg Tyr Glu Gln Ala Phe Leu Thr Ser Phe Val Gly Leu Arg Pro Glu
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Lys Tyr Phe Trp Thr Gly Leu Ser Asp Ile Gln Thr Lys Gly Thr Phe
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Gln Trp Thr Ile Glu Glu Glu Val Arg Phe Thr His Trp Asn Ser Asp
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Met Pro Gly Arg Lys Pro Gly Cys Val Ala Met Arg Thr Gly Ile Ala
595 600 605

Gly Gly Leu Trp Asp Val Leu Lys Cys Asp Glu Lys Ala Lys Phe Val
610 615 620

Cys Lys His Trp Ala Glu Gly Val Thr His Pro Pro Lys Pro Thr Thr
625 630 635 640

Thr Pro Glu Pro Lys Cys Pro Glu Asp Trp Gly Ala Ser Ser Arg Thr
645 650 655

Ser Leu Cys Phe Lys Leu Tyr Ala Lys Gly Lys His Glu Lys Lys Thr
660 665 670

Trp Phe Glu Ser Arg Asp Phe Cys Arg Ala Leu Gly Gly Asp Leu Ala
675 680 685

Ser Ile Asn Asn Lys Glu Glu Gln Gln Thr Ile Trp Arg Leu Ile Thr
690 695 700

Ala Ser Gly Ser Tyr His Lys Leu Phe Trp Leu Gly Leu Thr Tyr Gly
705 710 715 720

Ser Pro Ser Glu Gly Phe Thr Trp Ser Asp Gly Ser Pro Val Ser Tyr
725 730 735

Glu Asn Trp Ala Tyr Gly Glu Pro Asn Asn Tyr Gln Asn Val Glu Tyr
740 745 750

Cys Gly Glu Leu Lys Gly Asp Pro Thr Met Ser Trp Asn Asp Ile Asn
755 760 765

Cys Glu His Leu Asn Asn Trp Ile Cys Gln Ile Gln Lys Gly Gln Thr
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Pro Lys Pro Glu Pro Thr Pro Ala Pro Gln Asp Asn Pro Pro Val Thr
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Asp His Thr Ala Trp Ile Pro Phe His Gly His Cys Tyr Tyr Ile
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Asn Phe Trp Ile Gly Leu Phe Arg Asn Val Glu Gly Thr Trp Leu
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Asp Pro Ser Gly Glu Arg Asn Asp Cys Val Ala Leu His Ala Ser
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Ser Gly Phe Trp Ser Asn Ile His Cys Ser Ser Tyr Lys Gly Tyr
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Ile Cys Lys Arg Pro Lys Ile Ile Asp Ala Lys Pro Thr His Glu
1355 1360 1365

Leu Leu Thr Thr Lys Ala Asp Thr Arg Lys Met Asp Pro Ser Lys
1370 1375 1380

Pro Ser Ser Asn Val Ala Gly Val Val Ile Ile Val Ile Leu Leu
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Ile Leu Thr Gly Ala Gly Leu Ala Ala Tyr Phe Phe Tyr Lys Lys
1400 1405 1410

Arg Arg Val His Leu Pro Gln Glu Gly Ala Phe Glu Asn Thr Leu
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Tyr Phe Asn Ser Gln Ser Ser Pro Gly Thr Ser Asp Met Lys Asp
1430 1435 1440

| | |
|---|-----|
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| Thr Phe Leu Leu Gly Leu Pro Gly Asn Gly Leu Val Leu Trp Val Ala | |
| 35 40 45 | |
| ggc ctg aag atg cag cgg aca gtg aac aca att tgg ttc ctc cac ctc | 192 |
| Gly Leu Lys Met Gln Arg Thr Val Asn Thr Ile Trp Phe Leu His Leu | |
| 50 55 60 | |
| acc ttg gcg gac ctc ctc tgc tgc ctc tcc ttg ccc ttc tcg ctg gct | 240 |
| Thr Leu Ala Asp Leu Leu Cys Cys Leu Ser Leu Pro Phe Ser Leu Ala | |
| 65 70 75 80 | |
| cac ttg gct ctc cag gga cag tgg ccc tac ggc agg ttc cta tgc aag | 288 |
| His Leu Ala Leu Gln Gly Gln Trp Pro Tyr Gly Arg Phe Leu Cys Lys | |
| 85 90 95 | |
| ctc atc ccc tcc atc att gtc ctc aac atg ttt gcc agt gtc ttc ctg | 336 |
| Leu Ile Pro Ser Ile Ile Val Leu Asn Met Phe Ala Ser Val Phe Leu | |
| 100 105 110 | |
| ctt act gcc att agc ctg gat cgc tgt ctt gtg gta ttc aag cca atc | 384 |
| Leu Thr Ala Ile Ser Leu Asp Arg Cys Leu Val Val Phe Lys Pro Ile | |
| 115 120 125 | |
| tgg tgt cag aat cat cgc aat gta ggg atg gcc tgc tct atc tgt gga | 432 |
| Trp Cys Gln Asn His Arg Asn Val Gly Met Ala Cys Ser Ile Cys Gly | |
| 130 135 140 | |
| tgt atc tgg gtg gtg gct ttt gtg atg tgc att cct gtg ttc gtg tac | 480 |
| Cys Ile Trp Val Val Phe Val Met Cys Ile Pro Val Phe Val Tyr | |
| 145 150 155 160 | |
| cgg gaa atc ttc act aca gac aac cat aat aga tgt ggc tac aaa ttt | 528 |
| Arg Glu Ile Phe Thr Thr Asp Asn His Asn Arg Cys Gly Tyr Lys Phe | |
| 165 170 175 | |
| ggt ctc tcc agc tca tta gat tat cca gac ttt tat gga gat cca cta | 576 |
| Gly Leu Ser Ser Ser Leu Asp Tyr Pro Asp Phe Tyr Gly Asp Pro Leu | |
| 180 185 190 | |
| gaa aac agg tct ctt gaa aac att gtt cag ccg cct gga gaa atg aat | 624 |
| Glu Asn Arg Ser Leu Glu Asn Ile Val Gln Pro Pro Gly Glu Met Asn | |
| 195 200 205 | |
| gat agg tta gat cct tcc tct ttc caa aca aat gat cat cct tgg aca | 672 |
| Asp Arg Leu Asp Pro Ser Ser Phe Gln Thr Asn Asp His Pro Trp Thr | |
| 210 215 220 | |
| gtc ccc act gtc ttc caa cct caa aca ttt caa aga cct tct gca gat | 720 |
| Val Pro Thr Val Phe Gln Pro Gln Thr Phe Gln Arg Pro Ser Ala Asp | |
| 225 230 235 240 | |
| tca ctc cct agg ggt tct gct agg tta aca agt caa aat ctg tat tct | 768 |
| Ser Leu Pro Arg Gly Ser Ala Arg Leu Thr Ser Gln Asn Leu Tyr Ser | |
| 245 250 255 | |

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| aat gta ttt aaa cct gct gat gtg gtc tca cct aaa atc ccc agt ggg | 816 |
| Asn Val Phe Lys Pro Ala Asp Val Val Ser Pro Lys Ile Pro Ser Gly | |
| 260 265 270 | |
| ttt cct att gaa gat cac gaa acc agc cca ctg gat aac tct gat gct | 864 |
| Phe Pro Ile Glu Asp His Glu Thr Ser Pro Leu Asp Asn Ser Asp Ala | |
| 275 280 285 | |
| ttt ctc tct act cat tta aag ctg ttc cct agc gct tct agc aat tcc | 912 |
| Phe Leu Ser Thr His Leu Lys Leu Phe Pro Ser Ala Ser Ser Asn Ser | |
| 290 295 300 | |
| ttc tac gag tct gag cta cca caa ggt ttc cag gat tat tac aat tta | 960 |
| Phe Tyr Glu Ser Glu Leu Pro Gln Gly Phe Gln Asp Tyr Tyr Asn Leu | |
| 305 310 315 320 | |
| ggc caa ttc aca gat gac gat caa gtg cca aca ccc ctc gtg gca ata | 1008 |
| Gly Gln Phe Thr Asp Asp Asp Gln Val Pro Thr Pro Leu Val Ala Ile | |
| 325 330 335 | |
| acg atc act agg cta gtg gtg ggt ttc ctg ctg ccc tct gtt atc atg | 1056 |
| Thr Ile Thr Arg Leu Val Val Gly Phe Leu Leu Pro Ser Val Ile Met | |
| 340 345 350 | |
| ata gcc tgt tac agc ttc att gtc ttc cga atg caa agg ggc cgc ttc | 1104 |
| Ile Ala Cys Tyr Ser Phe Ile Val Phe Arg Met Gln Arg Gly Arg Phe | |
| 355 360 365 | |
| gcc aag tct cag agc aaa acc ttt cga gtg gcc gtg gtg gtg gct | 1152 |
| Ala Lys Ser Gln Ser Lys Thr Phe Arg Val Ala Val Val Val Val Ala | |
| 370 375 380 | |
| gtc ttt ctt gtc tgc tgg act cca tac cac att ttt gga gtc ctg tca | 1200 |
| Val Phe Leu Val Cys Trp Thr Pro Tyr His Ile Phe Gly Val Leu Ser | |
| 385 390 395 400 | |
| ttg ctt act gac cca gaa act ccc ttg ggg aaa act ctg atg tcc tgg | 1248 |
| Leu Leu Thr Asp Pro Glu Thr Pro Leu Gly Lys Thr Leu Met Ser Trp | |
| 405 410 415 | |
| gat cat gta tgc att gct cta gca tct gcc aat agt tgc ttt aat ccc | 1296 |
| Asp His Val Cys Ile Ala Leu Ala Ser Ala Asn Ser Cys Phe Asn Pro | |
| 420 425 430 | |
| ttc ctt tat gcc ctc ttg ggg aaa gat ttt agg aag aaa gca agg cag | 1344 |
| Phe Leu Tyr Ala Leu Leu Gly Lys Asp Phe Arg Lys Lys Ala Arg Gln | |
| 435 440 445 | |
| tcc att cag gga att ctg gag gca gcc ttc agt gag gag ctc aca cgt | 1392 |
| Ser Ile Gln Gly Ile Leu Glu Ala Ala Phe Ser Glu Glu Leu Thr Arg | |
| 450 455 460 | |
| tcc acc cac tgt ccc tca aac aat gtc att tca gaa aga aat agt aca | 1440 |
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Thr Val

1449

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Gly Leu Lys Met Gln Arg Thr Val Asn Thr Ile Trp Phe Leu His Leu
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Thr Leu Ala Asp Leu Leu Cys Cys Leu Ser Leu Pro Phe Ser Leu Ala
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His Leu Ala Leu Gln Gly Gln Trp Pro Tyr Gly Arg Phe Leu Cys Lys
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Leu Ile Pro Ser Ile Ile Val Leu Asn Met Phe Ala Ser Val Phe Leu
100 105 110

Leu Thr Ala Ile Ser Leu Asp Arg Cys Leu Val Val Phe Lys Pro Ile
115 120 125

Trp Cys Gln Asn His Arg Asn Val Gly Met Ala Cys Ser Ile Cys Gly
130 135 140

Cys Ile Trp Val Val Ala Phe Val Met Cys Ile Pro Val Phe Val Tyr
145 150 155 160

Arg Glu Ile Phe Thr Thr Asp Asn His Asn Arg Cys Gly Tyr Lys Phe
165 170 175

DECLASSIFICATION AUTHORITY

Asp Arg Leu Asp Pro Ser Ser Phe Gln Thr Asn Asp His Pro Trp Thr
210 215 220

Ser Leu Pro Arg Gly Ser Ala Arg Leu Thr Ser Gln Asn Leu Tyr Ser
245 250 255

Phe Pro Ile Glu Asp His Glu Thr Ser Pro Leu Asp Asn Ser Asp Ala
275 280 285

Phe Leu Ser Thr His Leu Lys Leu Phe Pro Ser Ala Ser Ser Asn Ser
290 295 300

Phe Tyr Glu Ser Glu Leu Pro Gln Gly Phe Gln Asp Tyr Tyr Asn Leu
305 310 315 320

Gly Gln Phe Thr Asp Asp Asp Gln Val Pro Thr Pro Leu Val Ala Ile
325 330 335

Thr Ile Thr Arg Leu Val Val Gly Phe Leu Leu Pro Ser Val Ile Met
340 345 350

Ile Ala Cys Tyr Ser Phe Ile Val Phe Arg Met Gln Arg Gly Arg Phe
355 360 365

Ala Lys Ser Gln Ser Lys Thr Phe Arg Val Ala Val Val Val Val Ala
370 375 380

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| Val | Phe | Leu | Val | Cys | Trp | Thr | Pro | Tyr | His | Ile | Phe | Gly | Val | Leu | Ser |
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Leu Leu Thr Asp Pro Glu Thr Pro Leu Gly Lys Thr Leu Met Ser Trp
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Asp His Val Cys Ile Ala Leu Ala Ser Ala Asn Ser Cys Phe Asn Pro
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Phe Leu Tyr Ala Leu Leu Gly Lys Asp Phe Arg Lys Lys Ala Arg Gln
 435 440 445

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 Arg Lys Gln Glu Pro Ser Leu Gly Cys Ser Ile Pro Ala Ile Leu Phe
 50 55 60

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 65 70 75 80

ctc tgg gtg cag cag ctg atg cag cat ctg gac aag aca cca tcc cca 346
 Leu Trp Val Gln Gln Leu Met Gln His Leu Asp Lys Thr Pro Ser Pro
 85 90 95

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 Gln Lys Pro Ala Gln Gly Cys Arg Lys Asp Arg Gly Ala Ser Lys Thr
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ggc aag aaa gga aag ggc tcc aaa ggc tgc aag agg act gag cgg tca 442
 Gly Lys Lys Gly Lys Gly Ser Lys Gly Cys Lys Arg Thr Glu Arg Ser
 115 120 125

cag acc cct aaa ggg cca tag cccagtggagc agcctggagc cctggagacc 493
 Gln Thr Pro Lys Gly Pro
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Arg Lys Gln Glu Pro Ser Leu Gly Cys Ser Ile Pro Ala Ile Leu Phe
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Leu Pro Arg Lys Arg Ser Gln Ala Glu Leu Cys Ala Asp Pro Lys Glu
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Leu Trp Val Gln Gln Leu Met Gln His Leu Asp Lys Thr Pro Ser Pro
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aagtagatgt agtcgtttta cctgaaatgt ggaataatgg ctatgattta gagcatttaa 180
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| agtcgtffff | tattcttaac | tgtaaaatfff | tttatgttaa | aatattaaat | acaaattaca | 1680 |
| tttaacagtt | aagtatttat | ttcctacagt | taggcaatat | aatgataaaa | gattgtacta | 1740 |
| aatcgtataa | tgacagtgag | gagagtggtg | taaaattgaa | ttattttgat | aataaaaattg | 1800 |
| accagtttgc | cacgtatctt | caaaagagaa | ataacttaga | tcattattcaa | tttttgcaag | 1860 |
| tacgattagg | gatgcaggtc | ttagctaaaa | atataggtaa | attaattggt | atgtataacta | 1920 |

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| ttgcctatat ttttaacatt tttctgttta cgtaattac gaatttaaca ttttatttaa | 1980 |
| taagaagaca tgcacatggt gcacatgcac cttcttcttt ttggtgttat gtagaaagta | 2040 |
| ttatactatt tatactttta ccttttagtaa tagtaaattt tcatattaac tttttaatta | 2100 |
| tgattattttt aacagttatt tcttttaggtg taatctcagt atatgctcct gcagcaacta | 2160 |
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| gtttaaccct tttcattatc acacttatca tcaaagagcc atttgcccaa ttcattcaat | 2280 |
| taggcatcat aatagaagct attacattat tacctatttt ctttattaag gaggacttaa | 2340 |
| aatgaatata ttatttaact tattttttga ttttattact gggattttta aaaacattgg | 2400 |
| taacatcgca gcttatagta cttgtgactt cataatggat gaagttgaag taccaaaaga | 2460 |
| attaacacaa ttacacgaat aatttaaata gagagtgtga tagtag gtg gaa tta | 2515 |
| Val Glu Leu | |
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| tta aat agt tat aat ttt gtt tta ttc gta tta act caa atg ata tta | 2563 |
| Leu Asn Ser Tyr Asn Phe Val Leu Phe Val Leu Thr Gln Met Ile Leu | |
| 5 10 15 | |
| atg ttt aca ata cca gct ata att agt ggt att aag tac agt aaa ctt | 2611 |
| Met Phe Thr Ile Pro Ala Ile Ile Ser Gly Ile Lys Tyr Ser Lys Leu | |
| 20 25 30 35 | |
| gat tat ttt ttc atc ata gta att tcg aca tta tcg tta ttt cta ttt | 2659 |
| Asp Tyr Phe Phe Ile Ile Val Ile Ser Thr Leu Ser Leu Phe Leu Phe | |
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| aaa atg ttt gat agc gcg tcc tta atc ata tta act tca ttt att att | 2707 |
| Lys Met Phe Asp Ser Ala Ser Leu Ile Ile Leu Thr Ser Phe Ile Ile | |
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| ata atg tat ttt gtc aaa atc aaa tgg tat tct att ttg ttg att atg | 2755 |
| Ile Met Tyr Phe Val Lys Ile Lys Trp Tyr Ser Ile Leu Leu Ile Met | |
| 70 75 80 | |
| act tcg cag att att cta tac tgt gct aac tac atg tat ata gtt ata | 2803 |
| Thr Ser Gln Ile Ile Leu Tyr Cys Ala Asn Tyr Met Tyr Ile Val Ile | |
| 85 90 95 | |
| tat gca tat atc acc aaa att tct gat agt ata ttt gta ata ttc cct | 2851 |
| Tyr Ala Tyr Ile Thr Lys Ile Ser Asp Ser Ile Phe Val Ile Phe Pro | |
| 100 105 110 115 | |
| agc ttt ttt gta gtt tat gtg act att agt ata cta ttc tca tat ata | 2899 |
| Ser Phe Phe Val Val Tyr Val Thr Ile Ser Ile Leu Phe Ser Tyr Ile | |
| 120 125 130 | |

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| ata aat aga gtt ctc aaa aaa att agc aca cca tat cta ata cta aac Ile Asn Arg Val Leu Lys Lys Ile Ser Thr Pro Tyr Leu Ile Leu Asn 135 140 145 | 2947 |
| aaa gga ttt tta ata gtt att tcg act atc tta ctg ctt act ttt tca Lys Gly Phe Leu Ile Val Ile Ser Thr Ile Leu Leu Leu Thr Phe Ser 150 155 160 | 2995 |
| tta ttt ttc ttt tat tca caa ata aac tcg gat gaa gct aaa gta ata Leu Phe Phe Phe Tyr Ser Gln Ile Asn Ser Asp Glu Ala Lys Val Ile 165 170 175 | 3043 |
| agg cag tat tct tta ttt tat tgg tat cac tat att tta agt ata tta Arg Gln Tyr Ser Leu Phe Tyr Trp Tyr His Tyr Ile Leu Ser Ile Leu 180 185 190 195 | 3091 |
| aca ttg tat tct caa ttt ctc ctt aaa gag atg aaa tat aaa cgt aat Thr Leu Tyr Ser Gln Phe Leu Leu Lys Glu Met Lys Tyr Lys Arg Asn 200 205 210 | 3139 |
| caa gaa gaa att gaa acc tat tat gaa tat aca ttg aag att gaa gct Gln Glu Glu Ile Glu Thr Tyr Tyr Glu Tyr Thr Leu Lys Ile Glu Ala 215 220 225 | 3187 |
| atc aac aac gaa atg cgc aag ttc cgt cat gat tat gtc aat atc tta Ile Asn Asn Glu Met Arg Lys Phe Arg His Asp Tyr Val Asn Ile Leu 230 235 240 | 3235 |
| acg aca ctt tca gaa tac att cga gaa gat gac atg cct ggc cta cgt Thr Thr Leu Ser Glu Tyr Ile Arg Glu Asp Asp Met Pro Gly Leu Arg 245 250 255 | 3283 |
| gat tat ttc aat aaa aat att gta cct atg aaa gac aat tta caa atg Asp Tyr Phe Asn Lys Asn Ile Val Pro Met Lys Asp Asn Leu Gln Met 260 265 270 275 | 3331 |
| aat gct ata aaa tta aat ggt atc gag aat ctt aaa gta cgt gaa att Asn Ala Ile Lys Leu Asn Gly Ile Glu Asn Leu Lys Val Arg Glu Ile 280 285 290 | 3379 |
| aaa ggc tta att act gcg aaa att tta cgt gca caa gaa atg aat att Lys Gly Leu Ile Thr Ala Lys Ile Leu Arg Ala Gln Glu Met Asn Ile 295 300 305 | 3427 |
| ccg att agt atc gaa ata ccc gat gaa gta agt agc att aac ttg aat Pro Ile Ser Ile Glu Ile Pro Asp Glu Val Ser Ser Ile Asn Leu Asn 310 315 320 | 3475 |
| atg atc gat tta agt cgc agt att ggt att att ctt gat aat gca att Met Ile Asp Leu Ser Arg Ser Ile Gly Ile Ile Leu Asp Asn Ala Ile 325 330 335 | 3523 |
| gag gca tca act gaa att gat gac cct atc att cgc gtt gca ttt att Glu Ala Ser Thr Glu Ile Asp Asp Pro Ile Ile Arg Val Ala Phe Ile 340 345 350 355 | 3571 |

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| gaa agt gaa aat tca gta acg ttt att gtt atg aat aaa tgc gct gat | 3619 |
| Glu Ser Glu Asn Ser Val Thr Phe Ile Val Met Asn Lys Cys Ala Asp | |
| 360 365 370 | |
| gat ata cca cgc att cat gaa ttg ttc caa gaa agt ttt tct act aaa | 3667 |
| Asp Ile Pro Arg Ile His Glu Leu Phe Gln Glu Ser Phe Ser Thr Lys | |
| 375 380 385 | |
| ggg gaa ggt cgt ggt tta ggt cta tca act tta aaa gaa att gct gat | 3715 |
| Gly Glu Gly Arg Gly Leu Gly Leu Ser Thr Leu Lys Glu Ile Ala Asp | |
| 390 395 400 | |
| aat gca gac aat gtc tta tta gat aca att atc gaa aat ggt ttc ttt | 3763 |
| Asn Ala Asp Asn Val Leu Leu Asp Thr Ile Ile Glu Asn Gly Phe Phe | |
| 405 410 415 | |
| tat tca aaa agt tga aattattaac aactagccat aaggatgtga atgt atg aaa | 3818 |
| Tyr Ser Lys Ser Met Lys | |
| 420 425 | |
| att ttc att tgc gaa gac gat cca aaa caa aga gaa aac atg gtt acc | 3866 |
| Ile Phe Ile Cys Glu Asp Asp Pro Lys Gln Arg Glu Asn Met Val Thr | |
| 430 435 440 | |
| att att aaa aat tat ata atg ata gaa gaa aag cct atg gaa att gcc | 3914 |
| Ile Ile Lys Asn Tyr Ile Met Ile Glu Glu Lys Pro Met Glu Ile Ala | |
| 445 450 455 | |
| ctc gca act gat aat cct tat gag gtg ctt gag caa gct aaa aat atg | 3962 |
| Leu Ala Thr Asp Asn Pro Tyr Glu Val Leu Glu Gln Ala Lys Asn Met | |
| 460 465 470 | |
| aat gac ata ggc tgt tac ttt tta gat att caa ctt tca act gat att | 4010 |
| Asn Asp Ile Gly Cys Tyr Phe Leu Asp Ile Gln Leu Ser Thr Asp Ile | |
| 475 480 485 | |
| aat ggt atc aaa tta ggc agt gaa att cgt aag cat gac cca gtt ggt | 4058 |
| Asn Gly Ile Lys Leu Gly Ser Glu Ile Arg Lys His Asp Pro Val Gly | |
| 490 495 500 505 | |
| aac att att ttc gtt acg agt cac agt gaa ctt acc tat tta aca ttt | 4106 |
| Asn Ile Ile Phe Val Thr Ser His Ser Glu Leu Thr Tyr Leu Thr Phe | |
| 510 515 520 | |
| gtc tac aaa gtt gca gcg atg gat ttt att ttt aaa gat gat cca gct | 4154 |
| Val Tyr Lys Val Ala Ala Met Asp Phe Ile Phe Lys Asp Asp Pro Ala | |
| 525 530 535 | |
| gaa tta aga act cga att ata gac tgt tta gaa act gca cat aca cgc | 4202 |
| Glu Leu Arg Thr Arg Ile Ile Asp Cys Leu Glu Thr Ala His Thr Arg | |
| 540 545 550 | |
| tta caa ttg ttg tct aaa gat aat agc gtt gaa acg att gaa tta aaa | 4250 |
| Leu Gln Leu Leu Ser Lys Asp Asn Ser Val Glu Thr Ile Glu Leu Lys | |
| 555 560 565 | |

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| cgt ggc agt aat tca gtg tat gtt caa tat gat gat att atg ttt ttt | 4298 |
| Arg Gly Ser Asn Ser Val Tyr Val Gln Tyr Asp Asp Ile Met Phe Phe | |
| 570 575 580 585 | |
| gaa tca tca aca aaa tct cac aga ctc att gcc cat tta gat aac cgt | 4346 |
| Glu Ser Ser Thr Lys Ser His Arg Leu Ile Ala His Leu Asp Asn Arg | |
| 590 595 600 | |
| caa att gaa ttt tat ggt aat tta aaa gaa ctg agt caa tta gat gat | 4394 |
| Gln Ile Glu Phe Tyr Gly Asn Leu Lys Glu Leu Ser Gln Leu Asp Asp | |
| 605 610 615 | |
| cgt ttc ttt aga tgt cat aat agc ttt gtc gtc aat cgc cat aat att | 4442 |
| Arg Phe Phe Arg Cys His Asn Ser Phe Val Val Asn Arg His Asn Ile | |
| 620 625 630 | |
| gaa tct ata gat tcg aaa gag cga att gtc tat ttt aaa aat aaa gaa | 4490 |
| Glu Ser Ile Asp Ser Lys Glu Arg Ile Val Tyr Phe Lys Asn Lys Glu | |
| 635 640 645 | |
| cac tgc tat gca tcg gtg aga aac gtt aaa aaa ata taa taagataata | 4539 |
| His Cys Tyr Ala Ser Val Arg Asn Val Lys Lys Ile | |
| 650 655 660 | |
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| acagtttcca taaataaaat gctataattt cctactccgt gaatcttatt ttgtttaaaa | 4839 |
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Ser Lys Leu Asp Tyr Phe Phe Ile Ile Val Ile Ser Thr Leu Ser Leu
35 40 45

Phe Leu Phe Lys Met Phe Asp Ser Ala Ser Leu Ile Ile Leu Thr Ser
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Phe Ile Ile Ile Met Tyr Phe Val Lys Ile Lys Trp Tyr Ser Ile Leu
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Leu Ile Met Thr Ser Gln Ile Ile Leu Tyr Cys Ala Asn Tyr Met Tyr
85 90 95

Ile Val Ile Tyr Ala Tyr Ile Thr Lys Ile Ser Asp Ser Ile Phe Val
 100 105 110

Ile Phe Pro Ser Phe Phe Val Val Tyr Val Thr Ile Ser Ile Leu Phe
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Ser Tyr Ile Ile Asn Arg Val Leu Lys Lys Ile Ser Thr Pro Tyr Leu
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Ile Leu Asn Lys Gly Phe Leu Ile Val Ile Ser Thr Ile Leu Leu Leu
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Thr Phe Ser Leu Phe Phe Phe Tyr Ser Gln Ile Asn Ser Asp Glu Ala
 165 170 175

Lys Val Ile Arg Gln Tyr Ser Leu Phe Tyr Trp Tyr His Tyr Ile Leu
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Ser Ile Leu Thr Leu Tyr Ser Gln Phe Leu Leu Lys Glu Met Lys Tyr
 195 200 205

Lys Arg Asn Gln Glu Glu Ile Glu Thr Tyr Tyr Glu Tyr Thr Leu Lys
 210 215 220

Ile Glu Ala Ile Asn Asn Glu Met Arg Lys Phe Arg His Asp Tyr Val
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Asn Ile Leu Thr Thr Leu Ser Glu Tyr Ile Arg Glu Asp Asp Met Pro
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Gly Leu Arg Asp Tyr Phe Asn Lys Asn Ile Val Pro Met Lys Asp Asn
 260 265 270

Leu Gln Met Asn Ala Ile Lys Leu Asn Gly Ile Glu Asn Leu Lys Val
 275 280 285

Arg Glu Ile Lys Gly Leu Ile Thr Ala Lys Ile Leu Arg Ala Gln Glu
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Met Asn Ile Pro Ile Ser Ile Glu Ile Pro Asp Glu Val Ser Ser Ile
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Asn Leu Asn Met Ile Asp Leu Ser Arg Ser Ile Gly Ile Ile Leu Asp
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Ala Phe Ile Glu Ser Glu Asn Ser Val Thr Phe Ile Val Met Asn Lys
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Cys Ala Asp Asp Ile Pro Arg Ile His Glu Leu Phe Gln Glu Ser Phe
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Ser Thr Lys Gly Glu Gly Arg Gly Leu Gly Leu Ser Thr Leu Lys Glu
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Gly Phe Phe Tyr Ser Lys Ser
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Asn Met Asn Asp Ile Gly Cys Tyr Phe Leu Asp Ile Gln Leu Ser Thr
50 55 60

Asp Ile Asn Gly Ile Lys Leu Gly Ser Glu Ile Arg Lys His Asp Pro
65 70 75 80

Val Gly Asn Ile Ile Phe Val Thr Ser His Ser Glu Leu Thr Tyr Leu
85 90 95

Thr Phe Val Tyr Lys Val Ala Ala Met Asp Phe Ile Phe Lys Asp Asp
100 105 110

Pro Ala Glu Leu Arg Thr Arg Ile Ile Asp Cys Leu Glu Thr Ala His
115 120 125

Thr Arg Leu Gln Leu Leu Ser Lys Asp Asn Ser Val Glu Thr Ile Glu
130 135 140

Leu Lys Arg Gly Ser Asn Ser Val Tyr Val Gln Tyr Asp Asp Ile Met
145 150 155 160

Phe Phe Glu Ser Ser Thr Lys Ser His Arg Leu Ile Ala His Leu Asp
165 170 175

Asn Arg Gln Ile Glu Phe Tyr Gly Asn Leu Lys Glu Leu Ser Gln Leu
180 185 190

Asp Asp Arg Phe Phe Arg Cys His Asn Ser Phe Val Val Asn Arg His
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 Met Arg Tyr His Gly Asp Met Leu Leu Thr
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 act cct gtc atc agt acg ctc aag cag aat tat cct gat gca aaa atc 521
 Thr Pro Val Ile Ser Thr Leu Lys Gln Asn Tyr Pro Asp Ala Lys Ile
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 Asp Met Leu Leu Tyr Gln Asp Thr Ile Pro Ile Leu Ser Glu Asn Pro
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 Glu Ile Asn Ala Leu Tyr Gly Ile Ser Asn Lys Gly Ala Gly Thr Phe
 45 50 55

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| gat aaa att aaa aat gtg ctt tct ttg ata aaa act ctg cgt gcg aat | 665 |
| Asp Lys Ile Lys Asn Val Leu Ser Leu Ile Lys Thr Leu Arg Ala Asn | |
| 60 65 70 | |
| aat tat gac ctg gtc att aat ctt acg gat cag tgg atg gtg gcg ctg | 713 |
| Asn Tyr Asp Leu Val Ile Asn Leu Thr Asp Gln Trp Met Val Ala Leu | |
| 75 80 85 90 | |
| ctg gta cgt tgt tta cct gca cgg atg aaa ata tct caa ctt tat ggt | 761 |
| Leu Val Arg Cys Leu Pro Ala Arg Met Lys Ile Ser Gln Leu Tyr Gly | |
| 95 100 105 | |
| cat cgg cag cat ggt att tgg aaa aaa agc ttc aca cac tta gcg cca | 809 |
| His Arg Gln His Gly Ile Trp Lys Lys Ser Phe Thr His Leu Ala Pro | |
| 110 115 120 | |
| ata cac ggt aca cat att gtt gag cgt aat tta tct gtc ctt gag cca | 857 |
| Ile His Gly Thr His Ile Val Glu Arg Asn Leu Ser Val Leu Glu Pro | |
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| Leu Gly Ile Thr Asp Phe Tyr Thr Asp Thr Thr Met Ser Tyr Ala Glu | |
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| Asp Cys Trp Lys Lys Met Arg Arg Glu Leu Asp Ala Leu Gly Val Lys | |
| 155 160 165 170 | |
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| Asp His Tyr Val Val Ile Gln Pro Thr Ala Arg Gln Ile Phe Lys Cys | |
| 175 180 185 | |
| tgg gat aac gat aaa ttt tct aag gtt atc gat gcg ctg caa cag cga | 1049 |
| Trp Asp Asn Asp Lys Phe Ser Lys Val Ile Asp Ala Leu Gln Gln Arg | |
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| Gly Tyr Gln Val Val Leu Thr Cys Gly Pro Ser Ala Asp Asp Leu Ala | |
| 205 210 215 | |
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| Cys Val Asp Glu Ile Ala Arg Gly Cys Glu Thr Lys Pro Ile Thr Gly | |
| 220 225 230 | |
| ctt gca ggt aaa aca cgt ttt cct gaa ctg ggt gca tta att gat cat | 1193 |
| Leu Ala Gly Lys Thr Arg Phe Pro Glu Leu Gly Ala Leu Ile Asp His | |
| 235 240 245 250 | |
| gca gtg ctt ttt att ggt gtg gat tct gcg ccg gga cat att gca gcg | 1241 |
| Ala Val Leu Phe Ile Gly Val Asp Ser Ala Pro Gly His Ile Ala Ala | |
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| Ala Val Lys Thr Pro Val Ile Ser Leu Phe Gly Ala Thr Asp His Val | |
| 270 275 280 | |

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| Phe Trp Arg Pro Trp Thr Glu Asn Ile Ile Gln Phe Trp Ala Gly Asn | |
| 285 290 295 | |
| tat cag aaa atg ccg acc cgg cat gaa ctt gac cgc aac aaa aaa tat | 1385 |
| Tyr Gln Lys Met Pro Thr Arg His Glu Leu Asp Arg Asn Lys Lys Tyr | |
| 300 305 310 | |
| ctt tct gtt atc cca gcg gag gat gtg atc gcc gct acg gaa aag ctg | 1433 |
| Leu Ser Val Ile Pro Ala Glu Asp Val Ile Ala Ala Thr Glu Lys Leu | |
| 315 320 325 330 | |
| ttg cca gaa gat gcc cct tca gct gac agg aat gca caa tta tg atc | 1480 |
| Leu Pro Glu Asp Ala Pro Ser Ala Asp Arg Asn Ala Gln Leu Ile | |
| 335 340 345 | |
| gtg gcg ttt tgt tta tat aaa tat ttt cca ttt ggt ggg ctt caa cgt | 1528 |
| Val Ala Phe Cys Leu Tyr Lys Tyr Phe Pro Phe Gly Gly Leu Gln Arg | |
| 350 355 360 | |
| gac ttt atg cgc att gca tca aca gtt gcc gca cgc ggc cac cat gtt | 1576 |
| Asp Phe Met Arg Ile Ala Ser Thr Val Ala Ala Arg Gly His His Val | |
| 365 370 375 | |
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| Arg Val Tyr Thr Gln Ser Trp Glu Gly Asp Cys Pro Lys Ala Phe Glu | |
| 380 385 390 | |
| ctt att cag gtg cca gtt aag tcc cat acc aac cat gga cgc aat gca | 1672 |
| Leu Ile Gln Val Pro Val Lys Ser His Thr Asn His Gly Arg Asn Ala | |
| 395 400 405 | |
| gaa tat tat gcc tgg gta caa aat cat ctc aaa gag cat ccc gca gat | 1720 |
| Glu Tyr Tyr Ala Trp Val Gln Asn His Leu Lys Glu His Pro Ala Asp | |
| 410 415 420 425 | |
| cgc gtt gtt ggg ttt aat aag atg cct ggc ctg gat gtt tat ttt gcc | 1768 |
| Arg Val Val Gly Phe Asn Lys Met Pro Gly Leu Asp Val Tyr Phe Ala | |
| 430 435 440 | |
| gct gat gtt tgt tac gcc gag aaa gtt gcg caa gaa aaa ggt ttt tta | 1816 |
| Ala Asp Val Cys Tyr Ala Glu Lys Val Ala Gln Glu Lys Gly Phe Leu | |
| 445 450 455 | |
| tat cgt tta aca tca cga tat cgc cat tat gcc gca ttt gag cga gcg | 1864 |
| Tyr Arg Leu Thr Ser Arg Tyr Arg His Tyr Ala Ala Phe Glu Arg Ala | |
| 460 465 470 | |
| act ttc gag cag ggt aaa tcg acg aaa ctt atg atg ctg acc gat aag | 1912 |
| Thr Phe Glu Gln Gly Lys Ser Thr Lys Leu Met Met Leu Thr Asp Lys | |
| 475 480 485 | |
| caa atc gcc gat ttc cag aag cat tat caa act gaa cct gaa cgt ttt | 1960 |
| Gln Ile Ala Asp Phe Gln Lys His Tyr Gln Thr Glu Pro Glu Arg Phe | |
| 490 495 500 505 | |

caa att ctt cct ccc ggt att tat ccg gac aga aaa tac agt gag caa 2008
Gln Ile Leu Pro Pro Gly Ile Tyr Pro Asp Arg Lys Tyr Ser Glu Gln
510 515 520

atc cca aac agc cgt gaa att tat cgc cag aaa aat ggc ata aaa gag 2056
Ile Pro Asn Ser Arg Glu Ile Tyr Arg Gln Lys Asn Gly Ile Lys Glu
525 530 535

caa caa aac tta tta ctg cag gtt gga tca gat ttt ggc cgt aaa ggt 2104
Gln Gln Asn Leu Leu Leu Gln Val Gly Ser Asp Phe Gly Arg Lys Gly
540 545 550

gta gat cgc tca att gaa gct ttg gca tcg tta ccg gaa tca tta cgt 2152
Val Asp Arg Ser Ile Glu Ala Leu Ala Ser Leu Pro Glu Ser Leu Arg
555 560 565

cac aat acg ctt tta ttt gtt gtt ggt cag gat aag ccg cga aaa ttt 2200
His Asn Thr Leu Leu Phe Val Val Gly Gln Asp Lys Pro Arg Lys Phe
570 575 580 585

gaa gcg ctg gca gaa aaa ctc ggc gtg cgg agc aat gtg cat ttc ttc 2248
Glu Ala Leu Ala Glu Lys Leu Gly Val Arg Ser Asn Val His Phe Phe
590 595 600

tcc ggt cgc aat gat gtg tca gaa tta atg gca gcc gct gat tta tta 2296
Ser Gly Arg Asn Asp Val Ser Glu Leu Met Ala Ala Ala Asp Leu Leu
605 610 615

ctg cat ccc gct tat cag gaa gcc gcg ggt atc gtt ctt cta gaa gcg 2344
Leu His Pro Ala Tyr Gln Glu Ala Ala Gly Ile Val Leu Leu Glu Ala
620 625 630

atc act gct ggg tta cct gtt tta aca aca gcg gta tgt ggg tac gcg 2392
Ile Thr Ala Gly Leu Pro Val Leu Thr Thr Ala Val Cys Gly Tyr Ala
635 640 645

cat tat att gcg gat gcc aat tgt gga acg gtc atc gct gaa cct ttc 2440
His Tyr Ile Ala Asp Ala Asn Cys Gly Thr Val Ile Ala Glu Pro Phe
650 655 660 665

tct cag gaa caa tta aat gaa gtt tta cgt aaa gcg tta act cag tcg 2488
Ser Gln Glu Gln Leu Asn Glu Val Leu Arg Lys Ala Leu Thr Gln Ser
670 675 680

cca ttg cga atg gcc tgg gcg gag aat gct cgc cat tat gcc gat act 2536
Pro Leu Arg Met Ala Trp Ala Glu Asn Ala Arg His Tyr Ala Asp Thr
685 690 695

cag gat ttg tat agc ttg cca gaa aaa gcc gcg gat atc att aca ggt 2584
Gln Asp Leu Tyr Ser Leu Pro Glu Lys Ala Ala Asp Ile Ile Thr Gly
700 705 710

ggt tta g atg gtt gaa tta aaa gag ccg ctt gcc aca ctt tgg cgt ggt 2633
Gly Leu Met Val Glu Leu Lys Glu Pro Leu Ala Thr Leu Trp Arg Gly
715 720 725

| | |
|---|------|
| aaa gat gct ttt gca gag gtc aaa aaa ctg aac ggc gag gtc ttt cgt Lys Asp Ala Phe Ala Glu Val Lys Lys Leu Asn Gly Glu Val Phe Arg 730 735 740 745 | 2681 |
| gaa ctg gag act cgt cgt aca tta cgc ttt gaa ctg tcc ggg aaa agc Glu Leu Glu Thr Arg Arg Thr Leu Arg Phe Glu Leu Ser Gly Lys Ser 750 755 760 | 2729 |
| tat ttt ctt aaa tgg cac aag ggg acg aca tta aaa gag att ata aaa Tyr Phe Leu Lys Trp His Lys Gly Thr Thr Leu Lys Glu Ile Ile Lys 765 770 775 | 2777 |
| aat cta ctc tca ttg cgg atg ccc gtt ttg ggc gca gac aga gag tgg Asn Leu Leu Ser Leu Arg Met Pro Val Leu Gly Ala Asp Arg Glu Trp 780 785 790 | 2825 |
| cac gct att cat cgc ctg agt gat gtt ggc gtt gat aca atg aag ggc His Ala Ile His Arg Leu Ser Asp Val Gly Val Asp Thr Met Lys Gly 795 800 805 | 2873 |
| att ggg ttt ggc gaa aaa ggg tta aat cca tta act cgc gca tca ttt Ile Gly Phe Gly Glu Lys Gly Leu Asn Pro Leu Thr Arg Ala Ser Phe 810 815 820 825 | 2921 |
| att att acc gaa gat ctc act ccc aca att agc ctt gaa gat tat tgt Ile Ile Thr Glu Asp Leu Thr Pro Thr Ile Ser Leu Glu Asp Tyr Cys 830 835 840 | 2969 |
| gcc gat tgg gca gtc aac ccg cct gat ata cgt gtt aag cgt atg ctg Ala Asp Trp Ala Val Asn Pro Pro Asp Ile Arg Val Lys Arg Met Leu 845 850 855 | 3017 |
| atc gca cgt gta gca act atg gtg cgt aaa atg cat act gca ggg ata Ile Ala Arg Val Ala Thr Met Val Arg Lys Met His Thr Ala Gly Ile 860 865 870 | 3065 |
| aat cac cgc gac tgt tac att tgc cac ttt ttg ctt cat ttg cca ttt Asn His Arg Asp Cys Tyr Ile Cys His Phe Leu Leu His Leu Pro Phe 875 880 885 | 3113 |
| act ggc cgg gaa gat gaa tta aaa att tca gtt atc gat ctg cat cgg Thr Gly Arg Glu Asp Glu Leu Lys Ile Ser Val Ile Asp Leu His Arg 890 895 900 905 | 3161 |
| gca cag ata cgt gca aaa gta ccg cgc cgc tgg cgc gat aaa gac ctg Ala Gln Ile Arg Ala Lys Val Pro Arg Arg Trp Arg Asp Lys Asp Leu 910 915 920 | 3209 |
| att ggt tta tat ttc tca tca atg aat att ggc ctg acg caa aga gat Ile Gly Leu Tyr Phe Ser Ser Met Asn Ile Gly Leu Thr Gln Arg Asp 925 930 935 | 3257 |
| atc tgg cga ttt atg aag gtt tat ttt ggg atg cct tta cgc aaa ata Ile Trp Arg Phe Met Lys Val Tyr Phe Gly Met Pro Leu Arg Lys Ile 940 945 950 | 3305 |

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|---|------|
| ttg tct ctt gaa cag aat tta ttg aac atg gca agc gtt aag gcc gag | 3353 |
| Leu Ser Leu Glu Gln Asn Leu Leu Asn Met Ala Ser Val Lys Ala Glu | |
| 955 960 965 | |
| cgt att aaa gag cga aca caa cgc aaa gga tta taaaaatatt tattagtatg | 3406 |
| Arg Ile Lys Glu Arg Thr Gln Arg Lys Gly Leu | |
| 970 975 980 | |
| tactggaact aacttttatt atg act att tat ttt ata aat tgg gtt gca gat | 3458 |
| Met Thr Ile Tyr Phe Ile Asn Trp Val Ala Asp | |
| 985 990 | |
| tat gaa tta aaa atg att cag tac ctg aaa aaa aag tac aag ata aaa | 3506 |
| Tyr Glu Leu Lys Met Ile Gln Tyr Leu Lys Lys Lys Tyr Lys Ile Lys | |
| 995 1000 1005 | |
| aat ata aca aca cca aaa aaa tat aac tgg att aat aaa aaa ata | 3551 |
| Asn Ile Thr Thr Pro Lys Lys Tyr Asn Trp Ile Asn Lys Lys Ile | |
| 1010 1015 1020 | |
| tca aaa ata ggg atg gat aat gca tgg ctg ggg cga tta ttc atc | 3596 |
| Ser Lys Ile Gly Met Asp Asn Ala Trp Leu Gly Arg Leu Phe Ile | |
| 1025 1030 1035 | |
| aag cat tac ctc aat gat att aaa aaa gat gac ata att atc att | 3641 |
| Lys His Tyr Leu Asn Asp Ile Lys Lys Asp Asp Ile Ile Ile Ile | |
| 1040 1045 1050 | |
| aat gac agt gtt gtt aat aaa ggt atc aat aaa caa ata tta aaa | 3686 |
| Asn Asp Ser Val Val Asn Lys Gly Ile Asn Lys Gln Ile Leu Lys | |
| 1055 1060 1065 | |
| aat att aac tgt cat aaa gtt ttg ctt cta aga aat act gtt ggc | 3731 |
| Asn Ile Asn Cys His Lys Val Leu Leu Leu Arg Asn Thr Val Gly | |
| 1070 1075 1080 | |
| gaa gat ttt att ctt gat aac gcg aat tat ttc gat att ata tat | 3776 |
| Glu Asp Phe Ile Leu Asp Asn Ala Asn Tyr Phe Asp Ile Ile Tyr | |
| 1085 1090 1095 | |
| gat ttt gag cat aga ttt ata ggg aat gaa aag atc aag gca ata | 3821 |
| Asp Phe Glu His Arg Phe Ile Gly Asn Glu Lys Ile Lys Ala Ile | |
| 1100 1105 1110 | |
| gaa caa ttt ttt cct ata gga atg gat gaa att aga aat tat agt | 3866 |
| Glu Gln Phe Phe Pro Ile Gly Met Asp Glu Ile Arg Asn Tyr Ser | |
| 1115 1120 1125 | |
| tta tct gac aaa aat aac agc cag cca ata tgt ttt ttc ctt ggt | 3911 |
| Leu Ser Asp Lys Asn Asn Ser Gln Pro Ile Cys Phe Phe Leu Gly | |
| 1130 1135 1140 | |
| cgt gat aaa ggg cgt ctt caa ata att aat gag tta gcc gag aga | 3956 |
| Arg Asp Lys Gly Arg Leu Gln Ile Ile Asn Glu Leu Ala Glu Arg | |
| 1145 1150 1155 | |

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|---|------|
| tta aca aca cta gga tgt aag cta gat ttt aat gtt gtc aaa gat | 4001 |
| Leu Thr Thr Leu Gly Cys Lys Leu Asp Phe Asn Val Val Lys Asp | |
| 1160 1165 1170 | |
| aag aca tca tct acg act tca aag tat ttg att gaa aaa caa ata | 4046 |
| Lys Thr Ser Ser Thr Thr Ser Lys Tyr Leu Ile Glu Lys Gln Ile | |
| 1175 1180 1185 | |
| tct tat gaa gag aat att aga aga aca tta aat gct aat ata att | 4091 |
| Ser Tyr Glu Glu Asn Ile Arg Arg Thr Leu Asn Ala Asn Ile Ile | |
| 1190 1195 1200 | |
| gtt gat ata acc aaa gaa aac caa tct ggc tgg act ctt cgt ata | 4136 |
| Val Asp Ile Thr Lys Glu Asn Gln Ser Gly Trp Thr Leu Arg Ile | |
| 1205 1210 1215 | |
| ctt gag gca cta ttt ttc aat aaa aaa tta att act aat aat ata | 4181 |
| Leu Glu Ala Leu Phe Phe Asn Lys Lys Leu Ile Thr Asn Asn Ile | |
| 1220 1225 1230 | |
| aat gta ttt ggt tca gaa atc tat agt gaa tct cgc ttt ttt ata | 4226 |
| Asn Val Phe Gly Ser Glu Ile Tyr Ser Glu Ser Arg Phe Phe Ile | |
| 1235 1240 1245 | |
| ata ggt cat gat gat tgg gat aag tta gag tat ttt att aac tca | 4271 |
| Ile Gly His Asp Asp Trp Asp Lys Leu Glu Tyr Phe Ile Asn Ser | |
| 1250 1255 1260 | |
| tct gtt aaa cca atg gat tat gat agt tta tat aaa ttc agt cca | 4316 |
| Ser Val Lys Pro Met Asp Tyr Asp Ser Leu Tyr Lys Phe Ser Pro | |
| 1265 1270 1275 | |
| gat aaa atg atg tca acg att gtt tct gat ttt ata gac aaa taa | 4361 |
| Asp Lys Met Met Ser Thr Ile Val Ser Asp Phe Ile Asp Lys | |
| 1280 1285 1290 | |
| aaccgttaaaa aca gtg agt ttt act caa tta atg aga gtt tct atg aaa | 4410 |
| Val Ser Phe Thr Gln Leu Met Arg Val Ser Met Lys | |
| 1295 1300 | |
| ata gcg ttt atc ggc gaa gct gtt tct gga ttt ggc ggc atg gaa | 4455 |
| Ile Ala Phe Ile Gly Glu Ala Val Ser Gly Phe Gly Gly Met Glu | |
| 1305 1310 1315 | |
| act gtc atc cgt gat gtt att act acc ttc agg caa caa cat atc | 4500 |
| Thr Val Ile Arg Asp Val Ile Thr Thr Phe Arg Gln Gln His Ile | |
| 1320 1325 1330 | |
| caa agt gaa atg ttt ttc ttt tgt cgt aat gac aaa atg gat aag | 4545 |
| Gln Ser Glu Met Phe Phe Phe Cys Arg Asn Asp Lys Met Asp Lys | |
| 1335 1340 1345 | |
| gga tgg ctg gaa ggt att aaa tac tca tgt tca ttt tcc aat att | 4590 |
| Gly Trp Leu Glu Gly Ile Lys Tyr Ser Cys Ser Phe Ser Asn Ile | |
| 1350 1355 1360 | |

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|---|------|
| cgt tta ggt ttt ttg cgt cgg gcg aaa cat att cat gct cta agt | 4635 |
| Arg Leu Gly Phe Leu Arg Arg Ala Lys His Ile His Ala Leu Ser | |
| 1365 1370 1375 | |
| aaa tgg ctt cag gag tac caa cca gat atc gtt att tgt att gat | 4680 |
| Lys Trp Leu Gln Glu Tyr Gln Pro Asp Ile Val Ile Cys Ile Asp | |
| 1380 1385 1390 | |
| gtg atc tcc tgc ctg ttt gcc gca aaa gca cgt aaa aaa tca gga | 4725 |
| Val Ile Ser Cys Leu Phe Ala Ala Lys Ala Arg Lys Lys Ser Gly | |
| 1395 1400 1405 | |
| att gat atg cca gta ttt tca tgg cca cat ttt tct tta gat cac | 4770 |
| Ile Asp Met Pro Val Phe Ser Trp Pro His Phe Ser Leu Asp His | |
| 1410 1415 1420 | |
| aaa aaa cat gct gaa tat atc acc tgt gcc gac tat cat tta gca | 4815 |
| Lys Lys His Ala Glu Tyr Ile Thr Cys Ala Asp Tyr His Leu Ala | |
| 1425 1430 1435 | |
| atc agc tct ggc att aaa cag caa atg att aat cga ggt gta gca | 4860 |
| Ile Ser Ser Gly Ile Lys Gln Gln Met Ile Asn Arg Gly Val Ala | |
| 1440 1445 1450 | |
| gaa tcg acg ata aat gtt att ttt aat ccc gtc gaa act aaa gac | 4905 |
| Glu Ser Thr Ile Asn Val Ile Phe Asn Pro Val Glu Thr Lys Asp | |
| 1455 1460 1465 | |
| tca gtc att ccc gcg ccc gag gaa ggt gaa acg gca acg ttt att | 4950 |
| Ser Val Ile Pro Ala Pro Glu Glu Gly Glu Thr Ala Thr Phe Ile | |
| 1470 1475 1480 | |
| tat gtt ggg cgt atg aaa ttt gaa ggc cag aaa aga gtt aaa gac | 4995 |
| Tyr Val Gly Arg Met Lys Phe Glu Gly Gln Lys Arg Val Lys Asp | |
| 1485 1490 1495 | |
| ctg ctt gat ggc tta tca caa gcg aaa ggt aac tgg aaa ctc cat | 5040 |
| Leu Leu Asp Gly Leu Ser Gln Ala Lys Gly Asn Trp Lys Leu His | |
| 1500 1505 1510 | |
| gta ttg ggt gat ggc tcc gat ttc gaa aaa tgc cag gct tat ggt | 5085 |
| Val Leu Gly Asp Gly Ser Asp Phe Glu Lys Cys Gln Ala Tyr Gly | |
| 1515 1520 1525 | |
| aga gaa tta aat att gat gat cga att gtc tgg tat ggt tgg caa | 5130 |
| Arg Glu Leu Asn Ile Asp Asp Arg Ile Val Trp Tyr Gly Trp Gln | |
| 1530 1535 1540 | |
| caa tat ccc tgg gaa ttg gtc cag caa gat att gaa aaa gtg agt | 5175 |
| Gln Tyr Pro Trp Glu Leu Val Gln Gln Asp Ile Glu Lys Val Ser | |
| 1545 1550 1555 | |
| gcg tta ttg ctc acg tca tct ttt gaa ggt ttc cca atg acc cta | 5220 |
| Ala Leu Leu Leu Thr Ser Ser Phe Glu Gly Phe Pro Met Thr Leu | |
| 1560 1565 1570 | |

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|--|------|
| ctt gaa gcc ttg tcg tgg ggg att cct tgt atc agt gcc gat tgt | 5265 |
| Leu Glu Ala Leu Ser Trp Gly Ile Pro Cys Ile Ser Ala Asp Cys | |
| 1575 1580 1585 | |
| gtc tcc ggg cct gct gac att att caa cct gat gtc aat ggc cat | 5310 |
| Val Ser Gly Pro Ala Asp Ile Ile Gln Pro Asp Val Asn Gly His | |
| 1590 1595 1600 | |
| ctg tat caa ccg gga gat att gct ggt ttt gta act ctt cta aat | 5355 |
| Leu Tyr Gln Pro Gly Asp Ile Ala Gly Phe Val Thr Leu Leu Asn | |
| 1605 1610 1615 | |
| aaa tat ata gca ggt gaa att cat atc gaa cat gaa aaa att cct | 5400 |
| Lys Tyr Ile Ala Gly Glu Ile His Ile Glu His Glu Lys Ile Pro | |
| 1620 1625 1630 | |
| gcg tcg atc gat gaa ttt tac caa tcg aag tat tac gat aga tta | 5445 |
| Ala Ser Ile Asp Glu Phe Tyr Gln Ser Lys Tyr Tyr Asp Arg Leu | |
| 1635 1640 1645 | |
| cat aag gta att att tct gct att tcc cgg agg aaa ta atg cag cag | 5492 |
| His Lys Val Ile Ile Ser Ala Ile Ser Arg Arg Lys Met Gln Gln | |
| 1650 1655 1660 | |
| gtg ttt ttc cag gaa act gag ttt ctt aat tca gtt att gat tat | 5537 |
| Val Phe Phe Gln Glu Thr Glu Phe Leu Asn Ser Val Ile Asp Tyr | |
| 1665 1670 1675 | |
| gat cat aaa gta gaa aca gaa aat ctt tgt ctg gac atc gct tat | 5582 |
| Asp His Lys Val Glu Thr Glu Asn Leu Cys Leu Asp Ile Ala Tyr | |
| 1680 1685 1690 | |
| gga act gac aaa aac ttt cta ttt ggt tgc gga att tcg att gct | 5627 |
| Gly Thr Asp Lys Asn Phe Leu Phe Gly Cys Gly Ile Ser Ile Ala | |
| 1695 1700 1705 | |
| tca ata tta aaa tat aat gaa gga agt cga ttg tgt ttc cat att | 5672 |
| Ser Ile Leu Lys Tyr Asn Glu Gly Ser Arg Leu Cys Phe His Ile | |
| 1710 1715 1720 | |
| ttt act gat tat ttt ggt gat gat gat cgt aag tat ttt gat gcc | 5717 |
| Phe Thr Asp Tyr Phe Gly Asp Asp Asp Arg Lys Tyr Phe Asp Ala | |
| 1725 1730 1735 | |
| ctg gcg ttg cag tat aaa acc aga att aaa ata tat ctg att aat | 5762 |
| Leu Ala Leu Gln Tyr Lys Thr Arg Ile Lys Ile Tyr Leu Ile Asn | |
| 1740 1745 1750 | |
| ggt gat cga ctg cgc tca ttg cct agc act aag aat tgg act cat | 5807 |
| Gly Asp Arg Leu Arg Ser Leu Pro Ser Thr Lys Asn Trp Thr His | |
| 1755 1760 1765 | |
| gca ata tat ttt cgt ttt gtt att gca gat tac ttt att aat aag | 5852 |
| Ala Ile Tyr Phe Arg Phe Val Ile Ala Asp Tyr Phe Ile Asn Lys | |
| 1770 1775 1780 | |

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|---------|---------|---------|------|---------|---------|-----|---------|-----|------|
| gcg cct | aaa gtc | ctt tat | ctg | gat gca | gat atc | att | tgt cag | ggg | 5897 |
| Ala Pro | Lys Val | Leu Tyr | Leu | Asp Ala | Asp Ile | Ile | Cys Gln | Gly | |
| 1785 | | | 1790 | | | | 1795 | | |
| act att | gag cca | cta att | aat | ttc tca | ttt cct | gac | gat aaa | gtc | 5942 |
| Thr Ile | Glu Pro | Leu Ile | Asn | Phe Ser | Phe Pro | Asp | Asp Lys | Val | |
| 1800 | | | 1805 | | | | 1810 | | |
| gca atg | gtt gtt | aca gaa | ggg | caa gct | gac tgg | tgg | gaa aaa | cgc | 5987 |
| Ala Met | Val Val | Thr Glu | Gly | Gln Ala | Asp Trp | Trp | Glu Lys | Arg | |
| 1815 | | | 1820 | | | | 1825 | | |
| gcc cat | tcg tta | ggg gtt | gcg | gga att | gct aaa | ggg | tac ttt | aac | 6032 |
| Ala His | Ser Leu | Gly Val | Ala | Gly Ile | Ala Lys | Gly | Tyr Phe | Asn | |
| 1830 | | | 1835 | | | | 1840 | | |
| tcc ggt | ttt tta | ttg att | aat | act gcc | caa tgg | gcg | gct cag | cag | 6077 |
| Ser Gly | Phe Leu | Leu Ile | Asn | Thr Ala | Gln Trp | Ala | Ala Gln | Gln | |
| 1845 | | | 1850 | | | | 1855 | | |
| gtt tct | gca cga | gct att | gca | atg cta | aat gag | cca | gaa ata | atc | 6122 |
| Val Ser | Ala Arg | Ala Ile | Ala | Met Leu | Asn Glu | Pro | Glu Ile | Ile | |
| 1860 | | | 1865 | | | | 1870 | | |
| aaa aaa | ata aca | cat cct | gat | cag gat | gtg tta | aat | atg ttg | ctg | 6167 |
| Lys Lys | Ile Thr | His Pro | Asp | Gln Asp | Val Leu | Asn | Met Leu | Leu | |
| 1875 | | | 1880 | | | | 1885 | | |
| gcg gat | aaa ctt | att ttc | gct | gat att | aaa tat | aac | acc cag | ttc | 6212 |
| Ala Asp | Lys Leu | Ile Phe | Ala | Asp Ile | Lys Tyr | Asn | Thr Gln | Phe | |
| 1890 | | | 1895 | | | | 1900 | | |
| agc tta | aat tat | caa ctc | aaa | gaa agc | ttt ata | aac | cca gta | acc | 6257 |
| Ser Leu | Asn Tyr | Gln Leu | Lys | Glu Ser | Phe Ile | Asn | Pro Val | Thr | |
| 1905 | | | 1910 | | | | 1915 | | |
| aac gat | act att | ttt atc | cat | tat atc | ggg cca | acc | aag ccc | tgg | 6302 |
| Asn Asp | Thr Ile | Phe Ile | His | Tyr Ile | Gly Pro | Thr | Lys Pro | Trp | |
| 1920 | | | 1925 | | | | 1930 | | |
| cat gat | tgg gcc | tgg gat | tat | cct gta | tca caa | gcc | ttt atg | gag | 6347 |
| His Asp | Trp Ala | Trp Asp | Tyr | Pro Val | Ser Gln | Ala | Phe Met | Glu | |
| 1935 | | | 1940 | | | | 1945 | | |
| gca aaa | aat gct | tcg cca | tgg | aag aat | acg gcg | ttg | ctg aaa | ccg | 6392 |
| Ala Lys | Asn Ala | Ser Pro | Trp | Lys Asn | Thr Ala | Leu | Leu Lys | Pro | |
| 1950 | | | 1955 | | | | 1960 | | |
| aac aat | agc aat | caa tta | aga | tat agc | gca aaa | cat | atg ctt | aaa | 6437 |
| Asn Asn | Ser Asn | Gln Leu | Arg | Tyr Ser | Ala Lys | His | Met Leu | Lys | |
| 1965 | | | 1970 | | | | 1975 | | |
| aag cat | aga tat | cta aaa | gga | ttt agc | aac tat | ctt | ttt tat | ttt | 6482 |
| Lys His | Arg Tyr | Leu Lys | Gly | Phe Ser | Asn Tyr | Leu | Phe Tyr | Phe | |
| 1980 | | | 1985 | | | | 1990 | | |

att gaa aag ata aag cat taa aactgggaaa ctataaagta atgatataag 6533
Ile Glu Lys Ile Lys His
1995

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ggtagcatt  gtg  gac tca ttt cct gcc  ata gag ata gat aaa  gtt aaa      6581
            Val  Asp Ser Phe Pro Ala   Ile Glu Ile Asp Lys  Val Lys
            2000                      2005                      2010

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gcc tgg gat ttt cgg cta gct aat ata aat act tct gaa tgt tta 6626
Ala Trp Asp Phe Arg Leu Ala Asn Ile Asn Thr Ser Glu Cys Leu
2015 2020 2025

aat gtt gcc tat ggt gtc gat gct aat tat ctt gat ggt gta ggt 6671
Asn Val Ala Tyr Gly Val Asp Ala Asn Tyr Leu Asp Gly Val Gly
2030 2035 2040

gtt tcc atc aca tca att gtc cta aat aat cga cat att aat ctt 6716
Val Ser Ile Thr Ser Ile Val Leu Asn Asn Arg His Ile Asn Leu
2045 2050 2055

gat ttt tat att att gct gat gtt tat aat gat ggt ttt ttt caa 6761
Asp Phe Tyr Ile Ile Ala Asp Val Tyr Asn Asp Gly Phe Phe Gln
2060 2065 2070

aaa att gca aag ctt gca gag caa aac caa tta aga atc acg tta 6806
Lys Ile Ala Lys Leu Ala Glu Gln Asn Gln Leu Arg Ile Thr Leu
2075 2080 2085

| | | | | | | | | | | | | | | | |
|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|------|
| tat | aga | att | aac | act | gat | aag | ctc | cag | tgc | ttg | cct | tgt | aca | cag | 6851 |
| Tyr | Arg | Ile | Asn | Thr | Asp | Lys | Leu | Gln | Cys | Leu | Pro | Cys | Thr | Gln | |
| | | 2090 | | | | | 2095 | | | | | 2100 | | | |

gtc tgg tca aga gca atg tac ttc cgt tta ttt gca ttt caa tta 6896
Val Trp Ser Arg Ala Met Tyr Phe Arg Leu Phe Ala Phe Gln Leu
2105 2110 2115

| | | | | |
|-------------|---------------------|---------------------|---------|------|
| ttg ggt tta | acg ctt gat cgt ttg | ctt tat ctt gat gca | gat gtt | 6941 |
| Leu Gly Leu | Thr Leu Asp Arg Leu | Leu Tyr Leu Asp Ala | Asp Val | |
| 2120 | 2125 | 2130 | | |

gtt tgt aaa ggc gat att agc caa cta tta cat ctg ggt tta aat 6986
Val Cys Lys Gly Asp Ile Ser Gln Leu Leu His Leu Gly Leu Asn
' 2135 2140 2145

gga gcg gtt gct gct gtt gtt aaa gat gtt gag cca atg caa gaa 7031
Gly Ala Val Ala Ala Val Val Lys Asp Val Glu Pro Met Gln Glu
2150 2155 2160

aag gcg gta tcc agg ttg tct gat cct gaa tta ctt ggg cag tac 7076
Lys Ala Val Ser Arg Leu Ser Asp Pro Glu Leu Leu Gly Gln Tyr
2165 2170 2175

ttt aat tcc ggt gtc gtt tat tta gac tta aaa aaa tgg gct gac 7121
Phe Asn Ser Gly Val Val Tyr Leu Asp Leu Lys Lys Trp Ala Asp
2180 2185 2190

[illegible]

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<210> 106
<211> 344
<212> PRT
<213> Escherichia coli
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<400> '106

Met Arg Tyr His Gly Asp Met Leu Leu Thr Thr Pro Val Ile Ser Thr
1 5 10 15

Leu Lys Gln Asn Tyr Pro Asp Ala Lys Ile Asp Met Leu Leu Tyr Gln
20 25 30

Asp Thr Ile Pro Ile Leu Ser Glu Asn Pro Glu Ile Asn Ala Leu Tyr
35 40 45

Gly Ile Ser Asn Lys Gly Ala Gly Thr Phe Asp Lys Ile Lys Asn Val
50 55 60

Leu Ser Leu Ile Lys Thr Leu Arg Ala Asn Asn Tyr Asp Leu Val Ile
65 70 75 80

Asn Leu Thr Asp Gln Trp Met Val Ala Leu Leu Val Arg Cys Leu Pro
85 90 95

Ala Arg Met Lys Ile Ser Gln Leu Tyr Gly His Arg Gln His Gly Ile
100 105 110

Trp Lys Lys Ser Phe Thr His Leu Ala Pro Ile His Gly Thr His Ile
115 120 125

Val Glu Arg Asn Leu Ser Val Leu Glu Pro Leu Gly Ile Thr Asp Phe
130 135 140

Tyr Thr Asp Thr Thr Met Ser Tyr Ala Glu Asp Cys Trp Lys Lys Met
145 150 155 160

Arg Arg Glu Leu Asp Ala Leu Gly Val Lys Asp His Tyr Val Val Ile
165 170 175

Gln Pro Thr Ala Arg Gln Ile Phe Lys Cys Trp Asp Asn Asp Lys Phe
180 185 190

Ser Lys Val Ile Asp Ala Leu Gln Gln Arg Gly Tyr Gln Val Val Leu
195 200 205

Thr Cys Gly Pro Ser Ala Asp Asp Leu Ala Cys Val Asp Glu Ile Ala
210 215 220

Arg Gly Cys Glu Thr Lys Pro Ile Thr Gly Leu Ala Gly Lys Thr Arg
225 230 235 240

Phe Pro Glu Leu Gly Ala Leu Ile Asp His Ala Val Leu Phe Ile Gly
245 250 255

Val Asp Ser Ala Pro Gly His Ile Ala Ala Ala Val Lys Thr Pro Val
260 265 270

Ile Ser Leu Phe Gly Ala Thr Asp His Val Phe Trp Arg Pro Trp Thr
 275 280 285

Glu Asn Ile Ile Gln Phe Trp Ala Gly Asn Tyr Gln Lys Met Pro Thr
 290 295 300

Arg His Glu Leu Asp Arg Asn Lys Lys Tyr Leu Ser Val Ile Pro Ala
 305 310 315 320

Glu Asp Val Ile Ala Ala Thr Glu Lys Leu Leu Pro Glu Asp Ala Pro
 325 330 335

Ser Ala Asp Arg Asn Ala Gln Leu
 340

<210> 107

<211> 371

<212> PRT

<213> Escherichia coli

<400> 107

Ile Val Ala Phe Cys Leu Tyr Lys Tyr Phe Pro Phe Gly Gly Leu Gln
 1 5 10 15

Arg Asp Phe Met Arg Ile Ala Ser Thr Val Ala Ala Arg Gly His His
 20 25 30

Val Arg Val Tyr Thr Gln Ser Trp Glu Gly Asp Cys Pro Lys Ala Phe
 35 40 45

Glu Leu Ile Gln Val Pro Val Lys Ser His Thr Asn His Gly Arg Asn
 50 55 60

Ala Glu Tyr Tyr Ala Trp Val Gln Asn His Leu Lys Glu His Pro Ala
 65 70 75 80

Asp Arg Val Val Gly Phe Asn Lys Met Pro Gly Leu Asp Val Tyr Phe
 85 90 95

Ala Ala Asp Val Cys Tyr Ala Glu Lys Val Ala Gln Glu Lys Gly Phe
 100 105 110

Leu Tyr Arg Leu Thr Ser Arg Tyr Arg His Tyr Ala Ala Phe Glu Arg
115 120 125

Ala Thr Phe Glu Gln Gly Lys Ser Thr Lys Leu Met Met Leu Thr Asp
130 135 140

Lys Gln Ile Ala Asp Phe Gln Lys His Tyr Gln Thr Glu Pro Glu Arg
145 150 155 160

Phe Gln Ile Leu Pro Pro Gly Ile Tyr Pro Asp Arg Lys Tyr Ser Glu
165 170 175

Gln Ile Pro Asn Ser Arg Glu Ile Tyr Arg Gln Lys Asn Gly Ile Lys
180 185 190

Glu Gln Gln Asn Leu Leu Leu Gln Val Gly Ser Asp Phe Gly Arg Lys
195 200 205

Gly Val Asp Arg Ser Ile Glu Ala Leu Ala Ser Leu Pro Glu Ser Leu
210 215 220

Arg His Asn Thr Leu Leu Phe Val Val Gly Gln Asp Lys Pro Arg Lys
225 230 235 240

Phe Glu Ala Leu Ala Glu Lys Leu Gly Val Arg Ser Asn Val His Phe
245 250 255

Phe Ser Gly Arg Asn Asp Val Ser Glu Leu Met Ala Ala Ala Asp Leu
260 265 270

Leu Leu His Pro Ala Tyr Gln Glu Ala Ala Gly Ile Val Leu Leu Glu
275 280 285

Ala Ile Thr Ala Gly Leu Pro Val Leu Thr Thr Ala Val Cys Gly Tyr
290 295 300

Ala His Tyr Ile Ala Asp Ala Asn Cys Gly Thr Val Ile Ala Glu Pro
305 310 315 320

Phe Ser Gln Glu Gln Leu Asn Glu Val Leu Arg Lys Ala Leu Thr Gln
325 330 335

Ser Pro Leu Arg Met Ala Trp Ala Glu Asn Ala Arg His Tyr Ala Asp
 340 345 350

Thr Gln Asp Leu Tyr Ser Leu Pro Glu Lys Ala Ala Asp Ile Ile Thr
 355 360 365

Gly Gly Leu
 370

<210> 108
 <211> 265
 <212> PRT
 <213> Escherichia coli

<400> 108

Met Val Glu Leu Lys Glu Pro Leu Ala Thr Leu Trp Arg Gly Lys Asp
 1 5 10 15

Ala Phe Ala Glu Val Lys Lys Leu Asn Gly Glu Val Phe Arg Glu Leu
 20 25 30

Glu Thr Arg Arg Thr Leu Arg Phe Glu Leu Ser Gly Lys Ser Tyr Phe
 35 40 45

Leu Lys Trp His Lys Gly Thr Thr Leu Lys Glu Ile Ile Lys Asn Leu
 50 55 60

Leu Ser Leu Arg Met Pro Val Leu Gly Ala Asp Arg Glu Trp His Ala
 65 70 75 80

Ile His Arg Leu Ser Asp Val Gly Val Asp Thr Met Lys Gly Ile Gly
 85 90 95

Phe Gly Glu Lys Gly Leu Asn Pro Leu Thr Arg Ala Ser Phe Ile Ile
 100 105 110

Thr Glu Asp Leu Thr Pro Thr Ile Ser Leu Glu Asp Tyr Cys Ala Asp
 115 120 125

Trp Ala Val Asn Pro Pro Asp Ile Arg Val Lys Arg Met Leu Ile Ala
 130 135 140

Tyr Asp Ser Leu Tyr Lys Phe Ser Pro Asp Lys Met Met Ser Thr Ile
 290 295 300

Val Ser Asp Phe Ile Asp Lys
 305 310

<210> 110
 <211> 369
 <212> PRT
 <213> Escherichia coli

<400> 110

Val Ser Phe Thr Gln Leu Met Arg Val Ser Met Lys Ile Ala Phe Ile
 1 5 10 15

Gly Glu Ala Val Ser Gly Phe Gly Gly Met Glu Thr Val Ile Arg Asp
 20 25 30

Val Ile Thr Thr Phe Arg Gln Gln His Ile Gln Ser Glu Met Phe Phe
 35 40 45

Phe Cys Arg Asn Asp Lys Met Asp Lys Gly Trp Leu Glu Gly Ile Lys
 50 55 60

Tyr Ser Cys Ser Phe Ser Asn Ile Arg Leu Gly Phe Leu Arg Arg Ala
 65 70 75 80

Lys His Ile His Ala Leu Ser Lys Trp Leu Gln Glu Tyr Gln Pro Asp
 85 90 95

Ile Val Ile Cys Ile Asp Val Ile Ser Cys Leu Phe Ala Ala Lys Ala
 100 105 110

Arg Lys Lys Ser Gly Ile Asp Met Pro Val Phe Ser Trp Pro His Phe
 115 120 125

Ser Leu Asp His Lys Lys His Ala Glu Tyr Ile Thr Cys Ala Asp Tyr
 130 135 140

His Leu Ala Ile Ser Ser Gly Ile Lys Gln Gln Met Ile Asn Arg Gly
 145 150 155 160

<210> 111
 <211> 339
 <212> PRT
 <213> Escherichia coli

<400> 111

Met Gln Gln Val Phe Phe Gln Glu Thr Glu Phe Leu Asn Ser Val Ile
 1 5 10 15

Asp Tyr Asp His Lys Val Glu Thr Glu Asn Leu Cys Leu Asp Ile Ala
 20 25 30

Tyr Gly Thr Asp Lys Asn Phe Leu Phe Gly Cys Gly Ile Ser Ile Ala
 35 40 45

Ser Ile Leu Lys Tyr Asn Glu Gly Ser Arg Leu Cys Phe His Ile Phe
 50 55 60

Thr Asp Tyr Phe Gly Asp Asp Asp Arg Lys Tyr Phe Asp Ala Leu Ala
 65 70 75 80

Leu Gln Tyr Lys Thr Arg Ile Lys Ile Tyr Leu Ile Asn Gly Asp Arg
 85 90 95

Leu Arg Ser Leu Pro Ser Thr Lys Asn Trp Thr His Ala Ile Tyr Phe
 100 105 110

Arg Phe Val Ile Ala Asp Tyr Phe Ile Asn Lys Ala Pro Lys Val Leu
 115 120 125

Tyr Leu Asp Ala Asp Ile Ile Cys Gln Gly Thr Ile Glu Pro Leu Ile
 130 135 140

Asn Phe Ser Phe Pro Asp Asp Lys Val Ala Met Val Val Thr Glu Gly
 145 150 155 160

Gln Ala Asp Trp Trp Glu Lys Arg Ala His Ser Leu Gly Val Ala Gly
 165 170 175

Ile Ala Lys Gly Tyr Phe Asn Ser Gly Phe Leu Leu Ile Asn Thr Ala
 180 185 190

Gln Trp Ala Ala Gln Gln Val Ser Ala Arg Ala Ile Ala Met Leu Asn
 195 200 205

Glu Pro Glu Ile Ile Lys Lys Ile Thr His Pro Asp Gln Asp Val Leu
 210 215 220

Asn Met Leu Leu Ala Asp Lys Leu Ile Phe Ala Asp Ile Lys Tyr Asn
 225 230 235 240

Thr Gln Phe Ser Leu Asn Tyr Gln Leu Lys Glu Ser Phe Ile Asn Pro
 245 250 255

Val Thr Asn Asp Thr Ile Phe Ile His Tyr Ile Gly Pro Thr Lys Pro
 260 265 270

Trp His Asp Trp Ala Trp Asp Tyr Pro Val Ser Gln Ala Phe Met Glu
 275 280 285

Ala Lys Asn Ala Ser Pro Trp Lys Asn Thr Ala Leu Leu Lys Pro Asn
 290 295 300

Asn Ser Asn Gln Leu Arg Tyr Ser Ala Lys His Met Leu Lys Lys His
 305 310 315 320

Arg Tyr Leu Lys Gly Phe Ser Asn Tyr Leu Phe Tyr Phe Ile Glu Lys
 325 330 335

Ile Lys His

<210> 112

<211> 314

<212> PRT

<213> Escherichia coli

<400> 112

Val Asp Ser Phe Pro Ala Ile Glu Ile Asp Lys Val Lys Ala Trp Asp
 1 5 10 15

Phe Arg Leu Ala Asn Ile Asn Thr Ser Glu Cys Leu Asn Val Ala Tyr
 20 25 30

Gly Val Asp Ala Asn Tyr Leu Asp Gly Val Gly Val Ser Ile Thr Ser
35 40 45

Ile Val Leu Asn Asn Arg His Ile Asn Leu Asp Phe Tyr Ile Ile Ala
50 55 60

Asp Val Tyr Asn Asp Gly Phe Phe Gln Lys Ile Ala Lys Leu Ala Glu
65 70 75 80

Gln Asn Gln Leu Arg Ile Thr Leu Tyr Arg Ile Asn Thr Asp Lys Leu
85 90 95

Gln Cys Leu Pro Cys Thr Gln Val Trp Ser Arg Ala Met Tyr Phe Arg
100 105 110

Leu Phe Ala Phe Gln Leu Leu Gly Leu Thr Leu Asp Arg Leu Leu Tyr
115 120 125

Leu Asp Ala Asp Val Val Cys Lys Gly Asp Ile Ser Gln Leu Leu His
130 135 140

Leu Gly Leu Asn Gly Ala Val Ala Ala Val Val Lys Asp Val Glu Pro
145 150 155 160

Met Gln Glu Lys Ala Val Ser Arg Leu Ser Asp Pro Glu Leu Leu Gly
165 170 175

Gln Tyr Phe Asn Ser Gly Val Val Tyr Leu Asp Leu Lys Lys Trp Ala
180 185 190

Asp Ala Lys Leu Thr Glu Lys Ala Leu Ser Ile Leu Met Ser Lys Asp
195 200 205

Asn Val Tyr Lys Tyr Pro Asp Gln Asp Val Met Asn Val Leu Leu Lys
210 215 220

Gly Met Thr Leu Phe Leu Pro Arg Glu Tyr Asn Thr Ile Tyr Thr Ile
225 230 235 240

Lys Ser Glu Leu Lys Asp Lys Thr His Gln Asn Tyr Lys Lys Leu Ile
245 250 255

Thr Glu Ser Thr Leu Leu Ile His Tyr Thr Gly Ala Thr Lys Pro Trp
 260 265 270

His Lys Trp Ala Ile Tyr Pro Ser Val Lys Tyr Tyr Lys Ile Ala Leu
 275 280 285

Glu Asn Ser Pro Trp Lys Asp Asp Ser Pro Arg Asp Ala Lys Ser Ile
 290 295 300

Ile Glu Phe Lys Lys Asp Ile Asn Ile Phe
 305 310

<210> 113
 <211> 8391
 <212> DNA
 <213> Mycobacterium bovis

<220>
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 <223>

<400> 113
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 Met Gly Thr Arg Thr Gly Gly Arg Gly Pro Gly Ser Val Arg Gln Ala
 1 5 10 15
 cct gac gtc ggc cgc cgt gtc ggt gcc cgg cgt gtt gct tac cca gat 96
 Pro Asp Val Gly Arg Arg Val Gly Ala Arg Arg Val Ala Tyr Pro Asp
 20 25 30
 cgc ggc gac ccg ggc gct ggc ccg tca agg cat gga cct cgt ggc cac 144
 Arg Gly Asp Pro Gly Ala Gly Pro Ser Arg His Gly Pro Arg Gly His
 35 40 45
 ccc gcc ggt cgc cat ggc ggc cat tcg caa ggt gtg ctg gcg gtg gaa 192
 Pro Ala Gly Arg His Gly Gly His Ser Gln Gly Val Leu Ala Val Glu
 50 55 60
 gcc ctc aag gct ggt ggc gca cgc gac gtc gag ctg ttt gcc ttg gcc 240
 Ala Leu Lys Ala Gly Gly Ala Arg Asp Val Glu Leu Phe Ala Leu Ala
 65 70 75 80
 cag ttg atc ggt gcc gcc gga acg ctg gtg gcc cgc cgg cgc gaa ttt 288
 Gln Leu Ile Gly Ala Ala Gly Thr Leu Val Ala Arg Arg Arg Glu Phe
 85 90 95
 ccg tcc tgg gcg atc gcg ccg atg gta tcg gtc acc aac gcc gac ccc 336
 Pro Ser Trp Ala Ile Ala Pro Met Val Ser Val Thr Asn Ala Asp Pro
 100 105 110

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| gag | cgc | atc | ggc | cgg | ttg | ctc | gac | gag | ttc | gcc | cag | gac | gtg | cgc | acg | 384 |
| Glu | Arg | Ile | Gly | Arg | Leu | Leu | Asp | Glu | Phe | Ala | Gln | Asp | Val | Arg | Thr | |
| | | 115 | | | | | 120 | | | | | 125 | | | | |
| gtg | ctg | cca | ccg | gtg | ttg | tcc | atc | cgc | aac | ggc | cgg | cgt | gcc | gtc | gtc | 432 |
| Val | Leu | Pro | Pro | Val | Leu | Ser | Ile | Arg | Asn | Gly | Arg | Arg | Ala | Val | Val | |
| | | 130 | | | | 135 | | | | | 140 | | | | | |
| atc | acc | ggc | acc | ccc | gag | cag | ctg | tcg | cgt | ttc | gag | ctt | tat | tgc | cgc | 480 |
| Ile | Thr | Gly | Thr | Pro | Glu | Gln | Leu | Ser | Arg | Phe | Glu | Leu | Tyr | Cys | Arg | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | |
| cag | atc | tcc | gag | aag | gaa | gaa | gcc | gac | cgc | aag | aac | aag | gtc | cgc | ggc | 528 |
| Gln | Ile | Ser | Glu | Lys | Glu | Glu | Ala | Asp | Arg | Lys | Asn | Lys | Val | Arg | Gly | |
| | | | | 165 | | | | | 170 | | | | | 175 | | |
| ggc | gac | gtc | ttc | tcg | ccg | gtc | ttc | gag | ccg | gtg | cag | gtg | gag | gtg | ggc | 576 |
| Gly | Asp | Val | Phe | Ser | Pro | Val | Phe | Glu | Pro | Val | Gln | Val | Glu | Val | Gly | |
| | | | 180 | | | | | 185 | | | | | 190 | | | |
| ttt | cac | acc | ccg | cgg | cta | tcc | gac | ggg | atc | gac | atc | gtc | gcg | ggc | tgg | 624 |
| Phe | His | Thr | Pro | Arg | Leu | Ser | Asp | Gly | Ile | Asp | Ile | Val | Ala | Gly | Trp | |
| | | 195 | | | | | 200 | | | | | 205 | | | | |
| gcc | gag | aag | gcg | ggc | ctc | gat | gtc | gcc | ttg | gct | cgg | gag | ctg | gcc | gat | 672 |
| Ala | Glu | Lys | Ala | Gly | Leu | Asp | Val | Ala | Leu | Ala | Arg | Glu | Leu | Ala | Asp | |
| | | 210 | | | | 215 | | | | | 220 | | | | | |
| gcc | atc | ttg | atc | aga | aag | gtc | gac | tgg | gtc | gac | gag | atc | acc | cgt | gtc | 720 |
| Ala | Ile | Leu | Ile | Arg | Lys | Val | Asp | Trp | Val | Asp | Glu | Ile | Thr | Arg | Val | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | |
| cac | cgg | gcc | ggc | gcc | cgc | tgg | atc | ctc | gac | ctg | ggg | ccg | ggc | gac | atc | 768 |
| His | Arg | Ala | Gly | Ala | Arg | Trp | Ile | Leu | Asp | Leu | Gly | Pro | Gly | Asp | Ile | |
| | | | | 245 | | | | | 250 | | | | | 255 | | |
| ctg | acc | cga | ctg | acc | gca | ccg | gtg | atc | cgc | ggc | ctg | ggc | atc | ggc | atc | 816 |
| Leu | Thr | Arg | Leu | Thr | Ala | Pro | Val | Ile | Arg | Gly | Leu | Gly | Ile | Gly | Ile | |
| | | | 260 | | | | | 265 | | | | | 270 | | | |
| gtg | ccg | gcg | cgt | acc | cgc | ggg | ggc | cag | cgc | aac | ctg | ttc | acc | gtc | ggc | 864 |
| Val | Pro | Ala | Arg | Thr | Arg | Gly | Gly | Gln | Arg | Asn | Leu | Phe | Thr | Val | Gly | |
| | | 275 | | | | | 280 | | | | | 285 | | | | |
| gcc | acc | ccc | gag | gtt | gcc | cgg | gcc | tgg | tcg | agc | tac | gca | ccg | acc | gtg | 912 |
| Ala | Thr | Pro | Glu | Val | Ala | Arg | Ala | Trp | Ser | Ser | Tyr | Ala | Pro | Thr | Val | |
| | | 290 | | | | 295 | | | | | 300 | | | | | |
| gtt | cgc | ctc | ccc | gac | ggc | agg | gtc | aag | ctc | tcg | acg | aag | ttc | acc | cgg | 960 |
| Val | Arg | Leu | Pro | Asp | Gly | Arg | Val | Lys | Leu | Ser | Thr | Lys | Phe | Thr | Arg | |
| 305 | | | | | 310 | | | | | 315 | | | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| gtg | gac | gcc | aag | atc | gtc | gcc | gcg | gcc | aac | ggc | cgg | cac | tgg | gcc | 1056 | |
| Val | Asp | Ala | Lys | Ile | Val | Ala | Ala | Ala | Ala | Asn | Gly | Arg | His | Trp | Ala | |
| | | 340 | | | | | | 345 | | | | | 350 | | | |
| gag | ctg | gcg | gcg | cgg | ggc | agg | tca | ccg | aag | aga | tct | tcg | gta | acc | gca | 1104 |
| Glu | Leu | Ala | Ala | Arg | Gly | Arg | Ser | Pro | Lys | Arg | Ser | Ser | Val | Thr | Ala | |
| | | 355 | | | | | 360 | | | | | 365 | | | | |
| tcg | aac | aaa | tgg | ccg | gcc | tgc | tcg | agc | cgg | gcc | gca | cct | atc | agt | tca | 1152 |
| Ser | Asn | Lys | Trp | Pro | Ala | Cys | Ser | Ser | Arg | Ala | Ala | Pro | Ile | Ser | Ser | |
| | | 370 | | | | 375 | | | | | 380 | | | | | |
| acg | cgc | tgt | tcc | tcg | atc | cct | acc | tgt | gaa | gct | tca | ggg | ggg | cgg | caa | 1200 |
| Thr | Arg | Cys | Ser | Ser | Ile | Pro | Thr | Cys | Glu | Ala | Ser | Gly | Gly | Arg | Gln | |
| | | | | | 390 | | | | 395 | | | | | | 400 | |
| gcg | gtt | ggg | gca | gaa | ggc | ccg | cca | gtc | cgg | cgc | cgc | gat | cga | cgg | cgt | 1248 |
| Ala | Val | Gly | Ala | Glu | Gly | Pro | Pro | Val | Arg | Arg | Arg | Asp | Arg | Arg | Arg | |
| | | | | 405 | | | | | 410 | | | | | 415 | | |
| ggg | gat | cag | cgc | cgg | cat | ccc | aga | cct | cga | cga | ggc | cgt | cga | gct | gat | 1296 |
| Gly | Asp | Gln | Arg | Arg | His | Pro | Arg | Pro | Arg | Arg | Gly | Arg | Arg | Ala | Asp | |
| | | | 420 | | | | | 425 | | | | | 430 | | | |
| cga | cga | act | ggg | cga | cat | cgg | cat | cag | cca | cgt | cgt | ggt | caa | acc | cgg | 1344 |
| Arg | Arg | Thr | Gly | Arg | His | Arg | His | Gln | Pro | Arg | Arg | Val | Gln | Thr | Arg | |
| | | 435 | | | | | 440 | | | | | 445 | | | | |
| gac | cat | cga | gca | gat | ccg | ctc | ggg | gat | tcg | cat | cgc | cac | cga | ggg | gcc | 1392 |
| Asp | His | Arg | Ala | Asp | Pro | Leu | Gly | Asp | Ser | His | Arg | His | Arg | Gly | Ala | |
| | | 450 | | | | 455 | | | | | 460 | | | | | |
| cac | caa | gcc | ggg | gat | cat | gca | cgt | cga | ggg | ccg | ggc | gcg | ccg | gcg | ggc | 1440 |
| His | Gln | Ala | Gly | Asp | His | Ala | Arg | Arg | Gly | Pro | Gly | Ala | Pro | Ala | Gly | |
| | | 465 | | | | 470 | | | | 475 | | | | | 480 | |
| acc | att | cct | ggg | agg | atc | tca | cac | ctg | ctg | ctg | gct | acc | tac | tcg | gca | 1488 |
| Thr | Ile | Pro | Gly | Arg | Ile | Ser | His | Leu | Leu | Leu | Ala | Thr | Tyr | Ser | Ala | |
| | | | | 485 | | | | | 490 | | | | | 495 | | |
| gat | cgg | gca | ccg | cgc | caa | cat | cac | gtg | tgc | gtc | ggc | ggc | ggc | cat | ctc | 1536 |
| Asp | Arg | Ala | Pro | Arg | Gln | His | His | Val | Cys | Val | Gly | Gly | Gly | His | Leu | |
| | | | 500 | | | | | 505 | | | | | 510 | | | |
| ggc | acc | ccg | aag | aag | ggc | tgc | gga | tat | ttg | tcc | ggg | cct | ggg | cgc | agc | 1584 |
| Gly | Thr | Pro | Lys | Lys | Gly | Cys | Gly | Tyr | Leu | Ser | Gly | Pro | Gly | Arg | Ser | |
| | | 515 | | | | | 520 | | | | | 525 | | | | |
| gta | cgg | ctt | ccc | att | gat | gcc | gat | cga | cgc | atc | ctg | gtc | ggc | acc | gcg | 1632 |
| Val | Arg | Leu | Pro | Ile | Asp | Ala | Asp | Arg | Arg | Ile | Leu | Val | Gly | Thr | Ala | |
| | | 530 | | | | 535 | | | | | 540 | | | | | |
| gcg | atg | gcc | acc | aag | gaa | tcc | acc | acg | tcg | cca | tcg | gtc | aag | cgg | atg | 1680 |

| | |
|---|------|
| ctc gtc gac act cag ggc acc gac caa tgg atc agc gcc gga aaa gcg Leu Val Asp Thr Gln Gly Thr Asp Gln Trp Ile Ser Ala Gly Lys Ala 565 570 575 | 1728 |
| cag ggc cgc atg cct cca gcc gag tca gct cgg tgc cga cat cca cga Gln Gly Arg Met Pro Pro Ala Glu Ser Ala Arg Cys Arg His Pro Arg 580 585 590 | 1776 |
| gat cga cac agc gca tcc gtg cgg cgc tgc tcg acg agg tgg ccg gtg Asp Arg His Ser Ala Ser Val Arg Arg Cys Ser Thr Arg Trp Pro Val 595 600 605 | 1824 |
| acg cgg agg cgg tcg cgg agc gtc gca tgg cca aga ccg cca agc cct Thr Arg Arg Arg Ser Arg Ser Val Ala Trp Pro Arg Pro Pro Ser Pro 610 615 620 | 1872 |
| act tgc cga cgt cgc cga cat gac cta cct gca gtg gct gcg ggc gct Thr Cys Arg Arg Arg Arg His Asp Leu Pro Ala Val Ala Ala Gly Ala 625 630 635 640 | 1920 |
| acg tcg aac tgg cca tcg ggg aag gca act cga ccg ccg aca ccg cct Thr Ser Asn Trp Pro Ser Gly Lys Ala Thr Arg Pro Pro Thr Pro Pro 645 650 655 | 1968 |
| cgg tgg gca gcc cgt ggc tgg ccg aca ctg gcg gga ccg ctt cga gca Arg Trp Ala Ala Arg Gly Trp Pro Thr Leu Ala Gly Pro Leu Arg Ala 660 665 670 | 2016 |
| gat gct gca gcg tgc cga agc ccg gtt gca ccc aca gga ttt cgg ccc Asp Ala Ala Ala Cys Arg Ser Pro Val Ala Pro Thr Gly Phe Arg Pro 675 680 685 | 2064 |
| gat cca gac gct att cac cga tgc tgg cct gct gga caa tcc gca gca Asp Pro Asp Ala Ile His Arg Cys Trp Pro Ala Gly Gln Ser Ala Ala 690 695 700 | 2112 |
| gcg atc gcc gcc ctc gtg gcg cgc tac ccc gac gcc gag acc gtg cag Ala Ile Ala Ala Leu Val Ala Arg Tyr Pro Asp Ala Glu Thr Val Gln 705 710 715 720 | 2160 |
| ttg cat ccc gcg gat gtg ccc ttt ttc gtg acg ttg tgc aag acg ctg Leu His Pro Ala Asp Val Pro Phe Phe Val Thr Leu Cys Lys Thr Leu 725 730 735 | 2208 |
| ggc aag ccg gtc aac ttc gtg ccg gcg atc gac ctc gtc gtg cgc gct Gly Lys Pro Val Asn Phe Val Pro Ala Ile Asp Leu Val Val Arg Ala 740 745 750 | 2256 |
| ggg ggc gca gcg act cgc tgt ggc agg ccc acg acg ccc gct acg acg Gly Gly Ala Ala Thr Arg Cys Gly Arg Pro Thr Thr Pro Ala Thr Thr 755 760 765 | 2304 |
| ccg atg cgg tgt gca tca ttc cgg gca cgc gtc ggt agc cgc atc acc Pro Met Arg Cys Ala Ser Phe Arg Ala Arg Val Gly Ser Arg Ile Thr 770 775 780 | 2352 |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|------|-----|-----|------|
| cgg | atg | gat | gaa | ccc | gtc | ggc | gag | ttg | ctg | gac | gct | ttc | gag | caa | gcc | 2400 |
| Arg | Met | Asp | Glu | Pro | Val | Gly | Glu | Leu | Leu | Asp | Ala | Phe | Glu | Gln | Ala | |
| 785 | | | | | 790 | | | | | 795 | | | | | 800 | |
| gca | atc | gat | gaa | gtg | ctc | ggc | gcc | ggt | gtc | gag | ccg | aag | gat | gtc | gcg | 2448 |
| Ala | Ile | Asp | Glu | Val | Leu | Gly | Ala | Gly | Val | Glu | Pro | Lys | Asp | Val | Ala | |
| | | | | 805 | | | | | 810 | | | | | 815 | | |
| tcc | ggc | cgg | ctg | ggc | cgg | gcc | gac | gtg | gcc | gga | ccg | ttg | gct | gtc | gtc | 2496 |
| Ser | Gly | Arg | Leu | Gly | Arg | Ala | Asp | Val | Ala | Gly | Pro | Leu | Ala | Val | Val | |
| | | | 820 | | | | | 825 | | | | | 830 | | | |
| ctc | gac | gca | ccc | gat | gtg | cgc | tgg | gcc | ggt | cgc | acc | gtg | acc | aac | ccg | 2544 |
| Leu | Asp | Ala | Pro | Asp | Val | Arg | Trp | Ala | Gly | Arg | Thr | Val | Thr | Asn | Pro | |
| | | 835 | | | | | 840 | | | | | 845 | | | | |
| gtg | cat | cgg | atc | cgc | gac | ccg | gcc | gaa | tgg | cag | gtg | cac | gat | gga | ccc | 2592 |
| Val | His | Arg | Ile | Arg | Asp | Pro | Ala | Glu | Trp | Gln | Val | His | Asp | Gly | Pro | |
| | 850 | | | | | 855 | | | | | 860 | | | | | |
| gaa | aac | ccg | cgc | gcc | gca | cac | tca | tcc | acc | ggc | gcc | cgg | ctg | cag | acg | 2640 |
| Glu | Asn | Pro | Arg | Ala | Ala | His | Ser | Ser | Thr | Gly | Ala | Arg | Leu | Gln | Thr | |
| 865 | | | | | 870 | | | | | 875 | | | | | 880 | |
| cac | ggc | gac | gac | gtc | gcc | ttg | agc | gtc | gcg | cgt | ctc | ggg | cac | ctg | ggt | 2688 |
| His | Gly | Asp | Asp | Val | Ala | Leu | Ser | Val | Ala | Arg | Leu | Gly | His | Leu | Gly | |
| | | | | 885 | | | | | 890 | | | | | 895 | | |
| cga | cat | ccg | att | cac | gtt | gcc | ggc | caa | cac | cgt | cga | tgg | cgg | cac | ccc | 2736 |
| Arg | His | Pro | Ile | His | Val | Ala | Gly | Gln | His | Arg | Arg | Trp | Arg | His | Pro | |
| | | | 900 | | | | | 905 | | | | | 910 | | | |
| ggt | gat | cgc | cac | cga | gga | cgc | cac | cac | gcc | atg | cgc | acg | gtg | ctg | cga | 2784 |
| Gly | Asp | Arg | His | Arg | Gly | Arg | His | His | Ala | Met | Arg | Thr | Val | Leu | Arg | |
| | | 915 | | | | | 920 | | | | | 925 | | | | |
| tcg | ccg | ccg | gtg | tcg | aca | gcc | cgg | agt | tct | tgc | tgc | ggt | ggc | caa | cgg | 2832 |
| Ser | Pro | Pro | Val | Ser | Thr | Ala | Arg | Ser | Ser | Cys | Cys | Gly | Gly | Gln | Arg | |
| | 930 | | | | | 935 | | | | | 940 | | | | | |
| gac | ggc | cac | ttt | gac | ggt | gga | ctg | gca | ccc | cga | gcg | tgt | tgc | cga | cca | 2880 |
| Asp | Gly | His | Phe | Asp | Gly | Gly | Leu | Ala | Pro | Arg | Ala | Cys | Cys | Arg | Pro | |
| 945 | | | | | 950 | | | | 955 | | | | | | 960 | |
| cac | cgt | cac | cgc | cac | gtt | cgg | tgc | gcg | ctg | gca | ccc | agc | ctc | acc | aac | 2928 |
| His | Arg | His | Arg | His | Val | Arg | Cys | Ala | Leu | Ala | Pro | Ser | Leu | Thr | Asn | |
| | | | | 965 | | | | 970 | | | | | | 975 | | |
| gtg | ccg | acg | cga | ctc | gtc | ggc | cct | tgt | tgg | cca | gcg | gtt | ttc | gcg | gcc | 2976 |
| Val | Pro | Thr | Arg | Leu | Val | Gly | Pro | Cys | Trp | Pro | Ala | Val | Phe | Ala | Ala | |
| | | | 980 | | | | | 985 | | | | | 990 | | | |
| atc | gga | tcg | gcg | gtc | acc | gac | acc | ggt | gag | ccg | gtg | gtg | gaa | ggc | ctg | 3024 |
| Ile | Gly | Ser | Ala | Val | Thr | Asp | Thr | Gly | Glu | Pro | Val | Val | Glu | Gly | Leu | |
| | | 995 | | | | | 1000 | | | | | | 1005 | | | |

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|---------|---------|---------|---------|---------|---------|------|---------|-----|------|
| ctg agc | ctg gtg | cat | ctg gac | acg cgg | ccg cgc | gtg | gtc ggt | cag | 3069 |
| Leu Ser | Leu Val | His | Leu Asp | Thr Arg | Pro Arg | Val | Val Gly | Gln | |
| 1010 | | | 1015 | | | 1020 | | | |
| ctg ccc | acg gtc | ccg gcc | caa | ttg acc | gtc acg | caa | cgg ctg | cca | 3114 |
| Leu Pro | Thr Val | Pro Ala | Gln | Leu Thr | Val Thr | Gln | Arg Leu | Pro | |
| 1025 | | | 1030 | | | 1035 | | | |
| acg caa | ccg ata | cgg aca | tgg | gcc gcg | tcg tgc | cgg | tct cgg | tcg | 3159 |
| Thr Gln | Pro Ile | Arg Thr | Trp | Ala Ala | Ser Cys | Arg | Ser Arg | Ser | |
| 1040 | | | 1045 | | | 1050 | | | |
| tcg ttc | acc gca | tgg cgc | cgt | gat cgc | cac tct | cga | gga gcg | att | 3204 |
| Ser Phe | Thr Ala | Trp Arg | Arg | Asp Arg | His Ser | Arg | Gly Ala | Ile | |
| 1055 | | | 1060 | | | 1065 | | | |
| cgc gat | cct ggg | tcg cac | cgg | ttc gcc | gag ctg | gac | cgg cgc | gag | 3249 |
| Arg Asp | Pro Gly | Ser His | Arg | Phe Ala | Glu Leu | Asp | Arg Arg | Glu | |
| 1070 | | | 1075 | | | 1080 | | | |
| ccg gtg | gcg cgg | tgt cgc | gaa | cgc cac | cga cac | ccc | gcg cgt | cgc | 3294 |
| Pro Val | Ala Arg | Cys Arg | Glu | Arg His | Arg His | Pro | Ala Arg | Arg | |
| 1085 | | | 1090 | | | 1095 | | | |
| cgc cgc | gac gtc | acg atc | acc | gcg ccg | gtc gac | atg | cgc ccg | ttc | 3339 |
| Arg Arg | Asp Val | Thr Ile | Thr | Ala Pro | Val Asp | Met | Arg Pro | Phe | |
| 1100 | | | 1105 | | | 1110 | | | |
| gcg gtg | gtg tcc | ggc gac | cac | aac ccc | att cac | acc | gac cgg | gcc | 3384 |
| Ala Val | Val Ser | Gly Asp | His | Asn Pro | Ile His | Thr | Asp Arg | Ala | |
| 1115 | | | 1120 | | | 1125 | | | |
| gcc gct | gct tgc | cgg cct | gga | gtc gcc | gat cgt | gca | cgg cat | gtg | 3429 |
| Ala Ala | Ala Cys | Arg Pro | Gly | Val Ala | Asp Arg | Ala | Arg His | Val | |
| 1130 | | | 1135 | | | 1140 | | | |
| gct gtc | ggc cgc | ggc gca | aca | cgc ggt | gac cgg | cac | cga cgg | gca | 3474 |
| Ala Val | Gly Arg | Gly Ala | Thr | Arg Gly | Asp Arg | His | Arg Arg | Ala | |
| 1145 | | | 1150 | | | 1155 | | | |
| ggc ccg | cca ccg | gcc cgg | ctg | gtc ggc | tgg acc | gcg | cgg ttt | ttg | 3519 |
| Gly Pro | Pro Pro | Ala Arg | Leu | Val Gly | Trp Thr | Ala | Arg Phe | Leu | |
| 1160 | | | 1165 | | | 1170 | | | |
| ggc atg | gtg gcc | ccg gcg | acg | agg tgg | act tcc | ggt | cga gcg | cgt | 3564 |
| Gly Met | Val Ala | Pro Ala | Thr | Arg Trp | Thr Ser | Gly | Arg Ala | Arg | |
| 1175 | | | 1180 | | | 1185 | | | |
| cgg atc | gac cag | ggc gca | gag | att gtg | gac gtg | gcc | gcg cgc | gtc | 3609 |
| Arg Ile | Asp Gln | Gly Ala | Glu | Ile Val | Asp Val | Ala | Ala Arg | Val | |
| 1190 | | | 1195 | | | 1200 | | | |
| ggg tcg | gat cta | gtg atg | tcg | gcc tcc | gcg cga | ctg | gcc gca | ccc | 3654 |
| Gly Ser | Asp Leu | Val Met | Ser | Ala Ser | Ala Arg | Leu | Ala Ala | Pro | |
| 1205 | | | 1210 | | | 1215 | | | |

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|---|------|
| aag acg gtc tac gca ttc ccc ggc cag ggc atc caa cac aag ggc | 3699 |
| Lys Thr Val Tyr Ala Phe Pro Gly Gln Gly Ile Gln His Lys Gly | |
| 1220 1225 1230 | |
| atg ggc atg gag gtg cgc gcc gct cca agg cgg ccc gca agg tgt | 3744 |
| Met Gly Met Glu Val Arg Ala Ala Pro Arg Arg Pro Ala Arg Cys | |
| 1235 1240 1245 | |
| ggg aca ccg cgg aca agt tca ccc gcg aca ccc tgg gct tct cgg | 3789 |
| Gly Thr Pro Arg Thr Ser Ser Pro Ala Thr Pro Trp Ala Ser Arg | |
| 1250 1255 1260 | |
| tac tgc acg tgg tcc gcg aca acc cga cca gca tca tcg cca gcg | 3834 |
| Tyr Cys Thr Trp Ser Ala Thr Thr Arg Pro Ala Ser Ser Pro Ala | |
| 1265 1270 1275 | |
| gtg tgc act acc acc acc gac ggg gtg ctc tac ctg acg cag ttc | 3879 |
| Val Cys Thr Thr Thr Thr Asp Gly Val Leu Tyr Leu Thr Gln Phe | |
| 1280 1285 1290 | |
| acc cag gtc gcg atg gcg acg gtg gcg gcc ggg cag gtc gcc gag | 3924 |
| Thr Gln Val Ala Met Ala Thr Val Ala Ala Gly Gln Val Ala Glu | |
| 1295 1300 1305 | |
| atg cgt gaa cag gga gcc ttc gtc gaa ggc gcc atc gcg tgc ggc | 3969 |
| Met Arg Glu Gln Gly Ala Phe Val Glu Gly Ala Ile Ala Cys Gly | |
| 1310 1315 1320 | |
| cac tcg gtc ggc gag tac acc gcg ctg gcc tgc gtg acc ggc atc | 4014 |
| His Ser Val Gly Glu Tyr Thr Ala Leu Ala Cys Val Thr Gly Ile | |
| 1325 1330 1335 | |
| tac caa ctg gaa gcc ttg ctg gag atg gtg ttt cac cgc ggg tcg | 4059 |
| Tyr Gln Leu Glu Ala Leu Leu Glu Met Val Phe His Arg Gly Ser | |
| 1340 1345 1350 | |
| aag atg cac gac atc gtt ccg cgc gac gag ctc ggc cgc tcc aac | 4104 |
| Lys Met His Asp Ile Val Pro Arg Asp Glu Leu Gly Arg Ser Asn | |
| 1355 1360 1365 | |
| tat cgg ctg tcg gcc atc cgg ccg tcc cag atc gac ctc gac gac | 4149 |
| Tyr Arg Leu Ser Ala Ile Arg Pro Ser Gln Ile Asp Leu Asp Asp | |
| 1370 1375 1380 | |
| gcc gac gtg ccc gcg ttc gtc gcc ggg atc gcg gag agc acc ggt | 4194 |
| Ala Asp Val Pro Ala Phe Val Ala Gly Ile Ala Glu Ser Thr Gly | |
| 1385 1390 1395 | |
| gaa ttc ctg gag atc gag aat ttc aac ctc ggt ggc tcg caa tac | 4239 |
| Glu Phe Leu Glu Ile Glu Asn Phe Asn Leu Gly Gly Ser Gln Tyr | |
| 1400 1405 1410 | |
| gcg atc gcg ggc acg gta cgc ggc ctc gag gcg ctc gag gcc gag | 4284 |
| Ala Ile Ala Gly Thr Val Arg Gly Leu Glu Ala Leu Glu Ala Glu | |
| 1415 1420 1425 | |

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|---|------|
| gtg gag cgg cgc cgc gag ctc acc ggc ggc cga cgg tcg ttc att | 4329 |
| Val Glu Arg Arg Arg Glu Leu Thr Gly Gly Arg Arg Ser Phe Ile | |
| 1430 1435 1440 | |
| ttg gtg ccc ggc atc gat gtt ccg ttc cac tcg cga gtg ctg cgg | 4374 |
| Leu Val Pro Gly Ile Asp Val Pro Phe His Ser Arg Val Leu Arg | |
| 1445 1450 1455 | |
| gtc ggg gtg gcc gaa ttc cgg cgc tcg ctg gac cgg gtc atg cgg | 4419 |
| Val Gly Val Ala Glu Phe Arg Arg Ser Leu Asp Arg Val Met Arg | |
| 1460 1465 1470 | |
| ccg acg cgg acc cga cct gat cat cgg gcg cta cat tcc caa cct | 4464 |
| Pro Thr Arg Thr Arg Pro Asp His Arg Ala Leu His Ser Gln Pro | |
| 1475 1480 1485 | |
| ggg gcc gcg gaa gtt caa ccc tgg acc gcg act tca tcc agg aaa | 4509 |
| Gly Ala Ala Glu Val Gln Pro Trp Thr Ala Thr Ser Ser Arg Lys | |
| 1490 1495 1500 | |
| tcc ggg att tgg tgc ccc gcc gag ccg ctc gac gag atc ctc gcc | 4554 |
| Ser Gly Ile Trp Cys Pro Ala Glu Pro Leu Asp Glu Ile Leu Ala | |
| 1505 1510 1515 | |
| gac tac gac acc tgg ctt cgc gac gac cgg cga gat ggc gcg cac | 4599 |
| Asp Tyr Asp Thr Trp Leu Arg Asp Asp Arg Arg Asp Gly Ala His | |
| 1520 1525 1530 | |
| ggg gtt cat cga gct gct ggc atg gca att cgc cag ccc ggt gcg | 4644 |
| Gly Val His Arg Ala Ala Gly Met Ala Ile Arg Gln Pro Gly Ala | |
| 1535 1540 1545 | |
| ctg gat cga gac gca gga tct gct gtt cat cga gga ggc gcc ggc | 4689 |
| Leu Asp Arg Asp Ala Gly Ser Ala Val His Arg Gly Gly Ala Gly | |
| 1550 1555 1560 | |
| ggg ctg ggt gtg gag cga ttc gtc gag atc ggt gtg aag agc tca | 4734 |
| Gly Leu Gly Val Glu Arg Phe Val Glu Ile Gly Val Lys Ser Ser | |
| 1565 1570 1575 | |
| ccg acg gtg gcg ggg tct tgc cac caa cac cct caa act gcc cga | 4779 |
| Pro Thr Val Ala Gly Ser Cys His Gln His Pro Gln Thr Ala Arg | |
| 1580 1585 1590 | |
| ata cgc cca cag cac agt gaa gtg ctc aac gcc gag cgt gat gcg | 4824 |
| Ile Arg Pro Gln His Ser Glu Val Leu Asn Ala Glu Arg Asp Ala | |
| 1595 1600 1605 | |
| cgg tgc tgt tcg cca ccg aca ccg acc cgg agc cgg agc cgg agg | 4869 |
| Arg Cys Cys Ser Pro Pro Thr Pro Thr Arg Ser Arg Ser Arg Arg | |
| 1610 1615 1620 | |
| aag acg agc cgg tcg cgg aat cgc ccg cgc cgg acg tcg tct cgg | 4914 |
| Lys Thr Ser Arg Ser Arg Asn Arg Pro Arg Arg Thr Ser Ser Arg | |
| 1625 1630 1635 | |

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|---|------|
| aag ccg ccc ccg tcg cgc cgg ccg ctt cgt cgg cgg gcc cgc gtc | 4959 |
| Lys Pro Pro Pro Ser Arg Arg Pro Leu Arg Arg Arg Ala Arg Val | |
| 1640 1645 1650 | |
| ccg acg atc tgg ttt tcg acg ccg ccg atg cca cgc tgc gtg atc | 5004 |
| Pro Thr Ile Trp Phe Ser Thr Pro Pro Met Pro Arg Cys Val Ile | |
| 1655 1660 1665 | |
| gcg ctc tcg gcc aag atg cgc atc gac cag atc gaa gaa ctc gac | 5049 |
| Ala Leu Ser Ala Lys Met Arg Ile Asp Gln Ile Glu Glu Leu Asp | |
| 1670 1675 1680 | |
| tcc atc gag tcc atc acc gac ggt gcg tcg tcg cgg cgc aac cag | 5094 |
| Ser Ile Glu Ser Ile Thr Asp Gly Ala Ser Ser Arg Arg Asn Gln | |
| 1685 1690 1695 | |
| ctg ctg gtg gac ctg ggc tcc gag ctg aac ctc ggt gcc att gaa | 5139 |
| Leu Leu Val Asp Leu Gly Ser Glu Leu Asn Leu Gly Ala Ile Glu | |
| 1700 1705 1710 | |
| cgg cgc cgc cga atc gga cct ggc ccg tct gcg ctc aca ggt gac | 5184 |
| Arg Arg Arg Arg Ile Gly Pro Gly Arg Ser Ala Leu Thr Gly Asp | |
| 1715 1720 1725 | |
| caa act ggc gcg cac cta caa cgt tac ggc cca gtg ctt tcc gac | 5229 |
| Gln Thr Gly Ala His Leu Gln Arg Tyr Gly Pro Val Leu Ser Asp | |
| 1730 1735 1740 | |
| gcc atc aac gac cac gtt cgc acc gtc ctc gga ccg tcg ggc aag | 5274 |
| Ala Ile Asn Asp His Val Arg Thr Val Leu Gly Pro Ser Gly Lys | |
| 1745 1750 1755 | |
| cgg ccc ggc gcc atc gcc gag ccg gtg aag aag acc tgg gag ctc | 5319 |
| Arg Pro Gly Ala Ile Ala Glu Arg Val Lys Lys Thr Trp Glu Leu | |
| 1760 1765 1770 | |
| ggt gag gct ggg cca agc atg tca ccg tcg agg tcg cgc tgg gca | 5364 |
| Gly Glu Ala Gly Pro Ser Met Ser Pro Ser Arg Ser Arg Trp Ala | |
| 1775 1780 1785 | |
| ccc gcg agg gca gca gcg ttc gcg gcg gcg cca tgg gcc acc tgc | 5409 |
| Pro Ala Arg Ala Ala Ala Phe Ala Ala Ala Pro Trp Ala Thr Cys | |
| 1790 1795 1800 | |
| acg agg gcg cgc tgg ccg atg ccg cct ccg tcg aca agg tca tcg | 5454 |
| Thr Arg Ala Arg Trp Pro Met Pro Pro Pro Ser Thr Arg Ser Ser | |
| 1805 1810 1815 | |
| acg ccg ccg tcg cat ccg tgg ccg ccg cca ggg cgt ttc ggt agc | 5499 |
| Thr Arg Arg Ser His Arg Trp Pro Arg Pro Gly Arg Phe Gly Ser | |
| 1820 1825 1830 | |
| gct gcg tcg gcc ggt agt ggc ggc gcc acc atc gac gcg gcc gcg | 5544 |
| Ala Ala Ser Ala Gly Ser Gly Gly Ala Thr Ile Asp Ala Ala Ala | |
| 1835 1840 1845 | |

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|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|------|
| ctc | agc | gag | ttc | acc | gac | caa | atc | acc | ggc | cgt | gag | ggc | gtg | ctg | 5589 |
| Leu | Ser | Glu | Phe | Thr | Asp | Gln | Ile | Thr | Gly | Arg | Glu | Gly | Val | Leu | |
| | 1850 | | | | | 1855 | | | | | 1860 | | | | |
| cct | ccg | cgg | ccc | gcc | tgg | tgc | tgg | ggc | agc | tgg | gac | tgg | acg | acc | 5634 |
| Pro | Pro | Arg | Pro | Ala | Trp | Cys | Trp | Gly | Ser | Trp | Asp | Trp | Thr | Thr | |
| | 1865 | | | | | 1870 | | | | | 1875 | | | | |
| cca | tca | acc | gtt | gcc | ggc | cgc | ccc | gat | tcc | gag | ctg | atc | gac | ttg | 5679 |
| Pro | Ser | Thr | Val | Ala | Gly | Arg | Pro | Asp | Ser | Glu | Leu | Ile | Asp | Leu | |
| | 1880 | | | | | 1885 | | | | | 1890 | | | | |
| gtc | acc | gcc | gaa | ctg | gga | cgg | act | ggc | cgc | ggc | tgg | tgg | cac | cgg | 5724 |
| Val | Thr | Ala | Glu | Leu | Gly | Arg | Thr | Gly | Arg | Gly | Trp | Trp | His | Arg | |
| | 1895 | | | | | 1900 | | | | | 1905 | | | | |
| tgt | tcg | acc | cca | aga | agg | ccg | tcg | tat | tcg | acg | acc | gct | ggc | cag | 5769 |
| Cys | Ser | Thr | Pro | Arg | Arg | Pro | Ser | Tyr | Ser | Thr | Thr | Ala | Gly | Gln | |
| | 1910 | | | | | 1915 | | | | | 1920 | | | | |
| cgc | ccg | cga | gga | cct | ggt | gaa | gct | gtg | gct | gac | cga | cgg | aag | gac | 5814 |
| Arg | Pro | Arg | Gly | Pro | Gly | Glu | Ala | Val | Ala | Asp | Arg | Arg | Lys | Asp | |
| | 1925 | | | | | 1930 | | | | | 1935 | | | | |
| cga | agg | cga | cat | cga | cgc | cga | ctg | gcc | gcg | ctg | gcg | gag | cgc | ttc | 5859 |
| Arg | Arg | Arg | His | Arg | Arg | Arg | Leu | Ala | Ala | Leu | Ala | Glu | Arg | Phe | |
| | 1940 | | | | | 1945 | | | | | 1950 | | | | |
| gag | ggt | gcc | gcc | acg | tcg | tgg | cga | ccc | agg | cta | cct | ggt | ggc | aag | 5904 |
| Glu | Gly | Ala | Ala | Thr | Ser | Trp | Arg | Pro | Arg | Leu | Pro | Gly | Gly | Lys | |
| | 1955 | | | | | 1960 | | | | | 1965 | | | | |
| gta | agt | cgc | tcg | cgc | ggg | ccg | gca | gat | cca | tgc | atc | gct | gta | cgg | 5949 |
| Val | Ser | Arg | Ser | Arg | Gly | Pro | Ala | Asp | Pro | Cys | Ile | Ala | Val | Arg | |
| | 1970 | | | | | 1975 | | | | | 1980 | | | | |
| ccg | cat | gcc | gcc | ggc | gcc | gag | aac | ccc | gaa | ccc | cgc | gta | cgg | cgg | 5994 |
| Pro | His | Ala | Ala | Gly | Ala | Glu | Asn | Pro | Glu | Pro | Arg | Val | Arg | Arg | |
| | 1985 | | | | | 1990 | | | | | 1995 | | | | |
| cga | agt | tgc | cgt | ggt | gac | cgg | cgc | ttc | gaa | ggg | ttc | gat | cgc | cgc | 6039 |
| Arg | Ser | Cys | Arg | Gly | Asp | Arg | Arg | Phe | Glu | Gly | Phe | Asp | Arg | Arg | |
| | 2000 | | | | | 2005 | | | | | 2010 | | | | |
| gtc | ggt | ggt | ggc | tcg | gct | gct | cga | cgc | gga | gcc | acc | gtc | atc | gcg | 6084 |
| Val | Gly | Gly | Gly | Ser | Ala | Ala | Arg | Arg | Gly | Ala | Thr | Val | Ile | Ala | |
| | 2015 | | | | | 2020 | | | | | 2025 | | | | |
| acc | acc | tcc | aag | ctc | gac | gag | gag | cgg | ctg | cgg | ttc | tac | cgc | acg | 6129 |
| Thr | Thr | Ser | Lys | Leu | Asp | Glu | Glu | Arg | Leu | Arg | Phe | Tyr | Arg | Thr | |
| | 2030 | | | | | 2035 | | | | | 2040 | | | | |
| ctg | tat | cgc | gac | cac | gcc | cgt | tac | ggc | gcg | gcg | ctg | tgg | ctg | gtc | 6174 |
| Leu | Tyr | Arg | Asp | His | Ala | Arg | Tyr | Gly | Ala | Ala | Leu | Trp | Leu | Val | |
| | 2045 | | | | | 2050 | | | | | 2055 | | | | |

| | | | | |
|---------|---------------------|---------------------|-------------|------|
| gcg gcg | aac atg gcg tcc tac | tcc gac gtc gac gcc | ctg gtc gaa | 6219 |
| Ala Ala | Asn Met Ala Ser Tyr | Ser Asp Val Asp Ala | Leu Val Glu | |
| 2060 | 2065 | 2070 | | |
| tgg atc | ggc acc gaa cag acc | gaa agc ctt ggg ccg | cag tcg att | 6264 |
| Trp Ile | Gly Thr Glu Gln Thr | Glu Ser Leu Gly Pro | Gln Ser Ile | |
| 2075 | 2080 | 2085 | | |
| cac atc | aaa gac gcg cag acc | ccg acg ctg ctg ttc | cgt tcg cgg | 6309 |
| His Ile | Lys Asp Ala Gln Thr | Pro Thr Leu Leu Phe | Arg Ser Arg | |
| 2090 | 2095 | 2100 | | |
| cgc acg | cgt gtc ggg act gtc | gga ggc cgg ttc gcg | cgc cga gat | 6354 |
| Arg Thr | Arg Val Gly Thr Val | Gly Gly Arg Phe Ala | Arg Arg Asp | |
| 2105 | 2110 | 2115 | | |
| gga gat | gaa agt gct gct gtg | gcg gtg caa cgg ctg | atc ggc ggc | 6399 |
| Gly Asp | Glu Ser Ala Ala Val | Ala Val Gln Arg Leu | Ile Gly Gly | |
| 2120 | 2125 | 2130 | | |
| ctg tcg | acg atc ggc gcc gaa | cgc gac atg ccg tcg | cgg ctc gag | 6444 |
| Leu Ser | Thr Ile Gly Ala Glu | Arg Asp Met Pro Ser | Arg Leu Glu | |
| 2135 | 2140 | 2145 | | |
| cgt ggt | gct gcc cgg ctc gcc | caa ccg tgg cat gtt | cgg cgg cga | 6489 |
| Arg Gly | Ala Ala Arg Leu Ala | Gln Pro Trp His Val | Arg Arg Arg | |
| 2150 | 2155 | 2160 | | |
| cgg gcc | cta cgg cga agc caa | gtc cgc gct gga tgc | cgt ggt gac | 6534 |
| Arg Ala | Leu Arg Arg Ser Gln | Val Arg Ala Gly Cys | Arg Gly Asp | |
| 2165 | 2170 | 2175 | | |
| gcg ctg | gca cgc cga gtc gtc | ctg ggc ggc acg ggt | cag cct ggc | 6579 |
| Ala Leu | Ala Arg Arg Val Val | Leu Gly Gly Thr Gly | Gln Pro Gly | |
| 2180 | 2185 | 2190 | | |
| gca cgc | gct cat cgg ctg gac | ccg cgg cac cgg gct | gat ggg cca | 6624 |
| Ala Arg | Ala His Arg Leu Asp | Pro Arg His Arg Ala | Asp Gly Pro | |
| 2195 | 2200 | 2205 | | |
| caa cga | tgc cat cgt ggc cgc | cgt cga aga ggc cgg | ggt cac cac | 6669 |
| Gln Arg | Cys His Arg Gly Arg | Arg Arg Arg Gly Arg | Gly His His | |
| 2210 | 2215 | 2220 | | |
| cta ctc | gac cga cga gat ggc | gcg gct gct gct cga | cct gtg tca | 6714 |
| Leu Leu | Asp Arg Arg Asp Gly | Ala Ala Ala Ala Arg | Pro Val Ser | |
| 2225 | 2230 | 2235 | | |
| tgc gga | atc caa ggt ggc tgc | ggc cgt tcg ccg atc | aag gcc gac | 6759 |
| Cys Gly | Ile Gln Gly Gly Cys | Gly Arg Ser Pro Ile | Lys Ala Asp | |
| 2240 | 2245 | 2250 | | |
| ctg acc | ggg ggc ctg ccg agg | cca acc tcg aca tgg | ccg agc tgg | 6804 |
| Leu Thr | Gly Gly Leu Pro Arg | Pro Thr Ser Thr Trp | Pro Ser Trp | |
| 2255 | 2260 | 2265 | | |

| | | |
|-----------------------------|---------------------------------|------|
| cgg cca agg cgc gcg agc aga | tgt cgg cag cgg cgg ccg tcg acg | 6849 |
| Arg Pro Arg Arg Ala Ser Arg | Cys Arg Gln Arg Arg Pro Ser Thr | |
| 2270 | 2275 2280 | |
| agg acg ccg agg ccc ctg gcg | cca tcg ccg cgc tgc cgt cgc cgc | 6894 |
| Arg Thr Pro Arg Pro Leu Ala | Pro Ser Pro Arg Cys Arg Arg Arg | |
| 2285 | 2290 2295 | |
| ccc ggt ttc acc ccc gca ccg | ccg ccg caa tgg gac gac ctc gat | 6939 |
| Pro Gly Phe Thr Pro Ala Pro | Pro Pro Gln Trp Asp Asp Leu Asp | |
| 2300 | 2305 2310 | |
| gtc gac ccg gcc gac ctg gtg | gtg atc gtc ggc ggc cgc gaa atc | 6984 |
| Val Asp Pro Ala Asp Leu Val | Val Ile Val Gly Gly Arg Glu Ile | |
| 2315 | 2320 2325 | |
| ggc ccg tac ggc tcg tca cgc | acc cgg ttc gag atg gag gtc gaa | 7029 |
| Gly Pro Tyr Gly Ser Ser Arg | Thr Arg Phe Glu Met Glu Val Glu | |
| 2330 | 2335 2340 | |
| aac gag ctg tcg gcg gcc ggc | gtg ctg gag ctg gcc tgg acc act | 7074 |
| Asn Glu Leu Ser Ala Ala Gly | Val Leu Glu Leu Ala Trp Thr Thr | |
| 2345 | 2350 2355 | |
| ggg ttg atc gct ggg aga cga | ccc gca acc cgg ttg gta cga cac | 7119 |
| Gly Leu Ile Ala Gly Arg Arg | Pro Ala Thr Arg Leu Val Arg His | |
| 2360 | 2365 2370 | |
| cga atc ccg cga aat ggt cga | cga atc cga gtt ggt gca gcg cta | 7164 |
| Arg Ile Arg Arg Asn Gly Arg | Arg Ile Arg Val Gly Ala Ala Leu | |
| 2375 | 2380 2385 | |
| cac gac gcc gtg gtg cag cgc | gtc ggc att cgc gaa ttc gtt gat | 7209 |
| His Asp Ala Val Val Gln Arg | Val Gly Ile Arg Glu Phe Val Asp | |
| 2390 | 2395 2400 | |
| gac ggc gcg atc gac ccc gac | cac gcc tcg ccg ctg ctg gtg tcg | 7254 |
| Asp Gly Ala Ile Asp Pro Asp | His Ala Ser Pro Leu Leu Val Ser | |
| 2405 | 2410 2415 | |
| gtg ttc ctg gag aag gac ttc | gcg ttc gtg gtg tcc tcg gag gcc | 7299 |
| Val Phe Leu Glu Lys Asp Phe | Ala Phe Val Val Ser Ser Glu Ala | |
| 2420 | 2425 2430 | |
| gat gcg cgc gcc ttc gtc gag | ttc gat ccc gag cac acg gtc atc | 7344 |
| Asp Ala Arg Ala Phe Val Glu | Phe Asp Pro Glu His Thr Val Ile | |
| 2435 | 2440 2445 | |
| cgg ccg gtg ccc gac tcc acc | gac tgg cag gtc atc cgc aag gcc | 7389 |
| Arg Pro Val Pro Asp Ser Thr | Asp Trp Gln Val Ile Arg Lys Ala | |
| 2450 | 2455 2460 | |
| ggc acc gag atc ccg gtg ccg | cga aag acc aag ctg tcc cgc gtc | 7434 |
| Gly Thr Glu Ile Arg Val Pro | Arg Lys Thr Lys Leu Ser Arg Val | |
| 2465 | 2470 2475 | |

| | | | |
|-----------------------------|---------------------|-------------|------|
| gtc ggc ggc cag atc ccg acc | ggg ttc gac ccg acg | gtg tgg ggc | 7479 |
| Val Gly Gly Gln Ile Pro Thr | Gly Phe Asp Pro Thr | Val Trp Gly | |
| 2480 | 2485 | 2490 | |
| atc agc gca gac atg gcc ggt | tcc atc gac cgg ttg | gcg gta tgg | 7524 |
| Ile Ser Ala Asp Met Ala Gly | Ser Ile Asp Arg Leu | Ala Val Trp | |
| 2495 | 2500 | 2505 | |
| aac atg tgg cgg acc gtc gac | cgg ttc ctg tcc tcc | ggt ttc agc | 7569 |
| Asn Met Trp Arg Thr Val Asp | Arg Phe Leu Ser Ser | Gly Phe Ser | |
| 2510 | 2515 | 2520 | |
| ccg gcc gag gtg atg cgt tac | gtg cac ccg agt ttg | gtg gcc aac | 7614 |
| Pro Ala Glu Val Met Arg Tyr | Val His Pro Ser Leu | Val Ala Asn | |
| 2525 | 2530 | 2535 | |
| acc cag ggc acc ggc atg ggc | ggc ggc acg tcc atg | cag acg atg | 7659 |
| Thr Gln Gly Thr Gly Met Gly | Gly Gly Thr Ser Met | Gln Thr Met | |
| 2540 | 2545 | 2550 | |
| tac cac ggc aat ctg ttg ggc | cgc aac aag ccg aac | gac atc ttc | 7704 |
| Tyr His Gly Asn Leu Leu Gly | Arg Asn Lys Pro Asn | Asp Ile Phe | |
| 2555 | 2560 | 2565 | |
| cag gaa gtc ttg ccg ata tca | ttc gcc gcg cac gtg | gtt cag tcc | 7749 |
| Gln Glu Val Leu Pro Ile Ser | Phe Ala Ala His Val | Val Gln Ser | |
| 2570 | 2575 | 2580 | |
| tac gtc ggt agc tac ggt gcg | atg atc cac ccg gta | gcc gcg tgc | 7794 |
| Tyr Val Gly Ser Tyr Gly Ala | Met Ile His Pro Val | Ala Ala Cys | |
| 2585 | 2590 | 2595 | |
| gcc acc gcc gcg gtg tcc gtc | gag gaa ggt gtc gac | aag atc ccg | 7839 |
| Ala Thr Ala Ala Val Ser Val | Glu Glu Gly Val Asp | Lys Ile Arg | |
| 2600 | 2605 | 2610 | |
| ttg gga agg ctc aac tgg tgg | tcc gcg gcc gtg gat | gac ctg acg | 7884 |
| Leu Gly Arg Leu Asn Trp Trp | Ser Ala Ala Val Asp | Asp Leu Thr | |
| 2615 | 2620 | 2625 | |
| ctg gag ggc atc atc gga ttc | ggt gac atg gcc gcc | acc gcc gac | 7929 |
| Leu Glu Gly Ile Ile Gly Phe | Gly Asp Met Ala Ala | Thr Ala Asp | |
| 2630 | 2635 | 2640 | |
| acg tcc atg atg cgc ggc cgc | ggc atc cac gac tcc | aag ttt tcc | 7974 |
| Thr Ser Met Met Arg Gly Arg | Gly Ile His Asp Ser | Lys Phe Ser | |
| 2645 | 2650 | 2655 | |
| cgg ccc aac gac cgc cgc cgt | ctg gct tcc tcc aag | ccc aag gcg | 8019 |
| Arg Pro Asn Asp Arg Arg Arg | Leu Ala Ser Ser Lys | Pro Lys Ala | |
| 2660 | 2665 | 2670 | |
| gcg gga cga tcc tgt tgg gcg | cgg gga cct ggc gct | gcg gat ggg | 8064 |
| Ala Gly Arg Ser Cys Trp Ala | Arg Gly Pro Gly Ala | Ala Asp Gly | |
| 2675 | 2680 | 2685 | |

[illegible]

```
<210> 114
<211> 2796
<212> PRT
<213> Mycobacterium bovis
```

<400> 114

Met Gly Thr Arg Thr Gly Gly Arg Gly Pro Gly Ser Val Arg Gln Ala
1 5 10 15

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Pro | Asp | Val | Gly | Arg | Arg | Val | Gly | Ala | Arg | Arg | Val | Ala | Tyr | Pro | Asp |
| | | | 20 | | | | | 25 | | | | | 30 | | |

Arg Gly Asp Pro Gly Ala Gly Pro Ser Arg His Gly Pro Arg Gly His
35 40 45

Pro Ala Gly Arg His Gly Gly His Ser Gln Gly Val Leu Ala Val Glu
50 55 60

Ala Leu Lys Ala Gly Gly Ala Arg Asp Val Glu Leu Phe Ala Leu Ala
65 70 75 80

Gln Leu Ile Gly Ala Ala Gly Thr Leu Val Ala Arg Arg Arg Glu Phe
85 90 95

Pro Ser Trp Ala Ile Ala Pro Met Val Ser Val Thr Asn Ala Asp Pro
100 105 110

Glu Arg Ile Gly Arg Leu Leu Asp Glu Phe Ala Gln Asp Val Arg Thr
115 120 125

Val Leu Pro Pro Val Leu Ser Ile Arg Asn Gly Arg Arg Ala Val Val
130 135 140

Ile Thr Gly Thr Pro Glu Gln Leu Ser Arg Phe Glu Leu Tyr Cys Arg
145 150 155 160

Gln Ile Ser Glu Lys Glu Glu Ala Asp Arg Lys Asn Lys Val Arg Gly
165 170 175

Gly Asp Val Phe Ser Pro Val Phe Glu Pro Val Gln Val Glu Val Gly
180 185 190

Phe His Thr Pro Arg Leu Ser Asp Gly Ile Asp Ile Val Ala Gly Trp
195 200 205

Ala Glu Lys Ala Gly Leu Asp Val Ala Leu Ala Arg Glu Leu Ala Asp
210 215 220

Ala Ile Leu Ile Arg Lys Val Asp Trp Val Asp Glu Ile Thr Arg Val
225 230 235 240

His Arg Ala Gly Ala Arg Trp Ile Leu Asp Leu Gly Pro Gly Asp Ile
245 250 255

Leu Thr Arg Leu Thr Ala Pro Val Ile Arg Gly Leu Gly Ile Gly Ile
260 265 270

Val Pro Ala Arg Thr Arg Gly Gly Gln Arg Asn Leu Phe Thr Val Gly
275 280 285

Ala Thr Pro Glu Val Ala Arg Ala Trp Ser Ser Tyr Ala Pro Thr Val
290 295 300

Val Arg Leu Pro Asp Gly Arg Val Lys Leu Ser Thr Lys Phe Thr Arg
305 310 315 320

Leu Thr Arg Arg Ser Pro Ile Leu Leu Ala Gly Met Thr Pro Thr Thr
325 330 335

Val Asp Ala Lys Ile Val Ala Ala Ala Ala Asn Gly Arg His Trp Ala
340 345 350

Glu Leu Ala Ala Arg Gly Arg Ser Pro Lys Arg Ser Ser Val Thr Ala
355 360 365

Ser Asn Lys Trp Pro Ala Cys Ser Ser Arg Ala Ala Pro Ile Ser Ser
370 375 380

Thr Arg Cys Ser Ser Ile Pro Thr Cys Glu Ala Ser Gly Gly Arg Gln
385 390 395 400

Ala Val Gly Ala Glu Gly Pro Pro Val Arg Arg Arg Asp Arg Arg Arg
405 410 415

Gly Asp Gln Arg Arg His Pro Arg Pro Arg Arg Gly Arg Arg Ala Asp
420 425 430

Arg Arg Thr Gly Arg His Arg His Gln Pro Arg Arg Val Gln Thr Arg
435 440 445

Asp His Arg Ala Asp Pro Leu Gly Asp Ser His Arg His Arg Gly Ala
450 455 460

His Gln Ala Gly Asp His Ala Arg Arg Gly Pro Gly Ala Pro Ala Gly
465 470 475 480

Thr Ile Pro Gly Arg Ile Ser His Leu Leu Leu Ala Thr Tyr Ser Ala
485 490 495

Asp Arg Ala Pro Arg Gln His His Val Cys Val Gly Gly Gly His Leu
500 505 510

Gly Thr Pro Lys Lys Gly Cys Gly Tyr Leu Ser Gly Pro Gly Arg Ser
515 520 525

Val Arg Leu Pro Ile Asp Ala Asp Arg Arg Ile Leu Val Gly Thr Ala
530 535 540

Ala Met Ala Thr Lys Glu Ser Thr Thr Ser Pro Ser Val Lys Arg Met
545 550 555 560

Leu Val Asp Thr Gln Gly Thr Asp Gln Trp Ile Ser Ala Gly Lys Ala
565 570 575

Gln Gly Arg Met Pro Pro Ala Glu Ser Ala Arg Cys Arg His Pro Arg
580 585 590

Asp Arg His Ser Ala Ser Val Arg Arg Cys Ser Thr Arg Trp Pro Val
595 600 605

Thr Arg Arg Arg Ser Arg Ser Val Ala Trp Pro Arg Pro Pro Ser Pro
610 615 620

Thr Cys Arg Arg Arg Arg His Asp Leu Pro Ala Val Ala Ala Gly Ala
625 630 635 640

Thr Ser Asn Trp Pro Ser Gly Lys Ala Thr Arg Pro Pro Thr Pro Pro
645 650 655

Arg Trp Ala Ala Arg Gly Trp Pro Thr Leu Ala Gly Pro Leu Arg Ala
660 665 670

Asp Ala Ala Ala Cys Arg Ser Pro Val Ala Pro Thr Gly Phe Arg Pro
675 680 685

Asp Pro Asp Ala Ile His Arg Cys Trp Pro Ala Gly Gln Ser Ala Ala
690 695 700

Ala Ile Ala Ala Leu Val Ala Arg Tyr Pro Asp Ala Glu Thr Val Gln
705 710 715 720

Leu His Pro Ala Asp Val Pro Phe Phe Val Thr Leu Cys Lys Thr Leu
725 730 735

| | | | |
|---------|---------------------|---------------------|-------------|
| Gly Met | Val Ala Pro Ala Thr | Arg Trp Thr Ser Gly | Arg Ala Arg |
| 1175 | 1180 | 1185 | |
| Arg Ile | Asp Gln Gly Ala Glu | Ile Val Asp Val Ala | Ala Arg Val |
| 1190 | 1195 | 1200 | |
| Gly Ser | Asp Leu Val Met Ser | Ala Ser Ala Arg Leu | Ala Ala Pro |
| 1205 | 1210 | 1215 | |
| Lys Thr | Val Tyr Ala Phe Pro | Gly Gln Gly Ile Gln | His Lys Gly |
| 1220 | 1225 | 1230 | |
| Met Gly | Met Glu Val Arg Ala | Ala Pro Arg Arg Pro | Ala Arg Cys |
| 1235 | 1240 | 1245 | |
| Gly Thr | Pro Arg Thr Ser Ser | Pro Ala Thr Pro Trp | Ala Ser Arg |
| 1250 | 1255 | 1260 | |
| Tyr Cys | Thr Trp Ser Ala Thr | Thr Arg Pro Ala Ser | Ser Pro Ala |
| 1265 | 1270 | 1275 | |
| Val Cys | Thr Thr Thr Thr Asp | Gly Val Leu Tyr Leu | Thr Gln Phe |
| 1280 | 1285 | 1290 | |
| Thr Gln | Val Ala Met Ala Thr | Val Ala Ala Gly Gln | Val Ala Glu |
| 1295 | 1300 | 1305 | |
| Met Arg | Glu Gln Gly Ala Phe | Val Glu Gly Ala Ile | Ala Cys Gly |
| 1310 | 1315 | 1320 | |
| His Ser | Val Gly Glu Tyr Thr | Ala Leu Ala Cys Val | Thr Gly Ile |
| 1325 | 1330 | 1335 | |
| Tyr Gln | Leu Glu Ala Leu Leu | Glu Met Val Phe His | Arg Gly Ser |
| 1340 | 1345 | 1350 | |
| Lys Met | His Asp Ile Val Pro | Arg Asp Glu Leu Gly | Arg Ser Asn |
| 1355 | 1360 | 1365 | |
| Tyr Arg | Leu Ser Ala Ile Arg | Pro Ser Gln Ile Asp | Leu Asp Asp |
| 1370 | 1375 | 1380 | |

| | | | | | | | | | |
|---------|---------|---------|------|---------|---------|------|---------|-----|--|
| Ala Asp | Val Pro | Ala Phe | Val | Ala Gly | Ile Ala | Glu | Ser Thr | Gly | |
| 1385 | | | 1390 | | | 1395 | | | |
| Glu Phe | Leu Glu | Ile Glu | Asn | Phe Asn | Leu Gly | Gly | Ser Gln | Tyr | |
| 1400 | | | 1405 | | | 1410 | | | |
| Ala Ile | Ala Gly | Thr Val | Arg | Gly Leu | Glu Ala | Leu | Glu Ala | Glu | |
| 1415 | | | 1420 | | | 1425 | | | |
| Val Glu | Arg Arg | Arg Glu | Leu | Thr Gly | Gly Arg | Arg | Ser Phe | Ile | |
| 1430 | | | 1435 | | | 1440 | | | |
| Leu Val | Pro Gly | Ile Asp | Val | Pro Phe | His Ser | Arg | Val Leu | Arg | |
| 1445 | | | 1450 | | | 1455 | | | |
| Val Gly | Val Ala | Glu Phe | Arg | Arg Ser | Leu Asp | Arg | Val Met | Arg | |
| 1460 | | | 1465 | | | 1470 | | | |
| Pro Thr | Arg Thr | Arg Pro | Asp | His Arg | Ala Leu | His | Ser Gln | Pro | |
| 1475 | | | 1480 | | | 1485 | | | |
| Gly Ala | Ala Glu | Val Gln | Pro | Trp Thr | Ala Thr | Ser | Ser Arg | Lys | |
| 1490 | | | 1495 | | | 1500 | | | |
| Ser Gly | Ile Trp | Cys Pro | Ala | Glu Pro | Leu Asp | Glu | Ile Leu | Ala | |
| 1505 | | | 1510 | | | 1515 | | | |
| Asp Tyr | Asp Thr | Trp Leu | Arg | Asp Asp | Arg Arg | Asp | Gly Ala | His | |
| 1520 | | | 1525 | | | 1530 | | | |
| Gly Val | His Arg | Ala Ala | Gly | Met Ala | Ile Arg | Gln | Pro Gly | Ala | |
| 1535 | | | 1540 | | | 1545 | | | |
| Leu Asp | Arg Asp | Ala Gly | Ser | Ala Val | His Arg | Gly | Gly Ala | Gly | |
| 1550 | | | 1555 | | | 1560 | | | |
| Gly Leu | Gly Val | Glu Arg | Phe | Val Glu | Ile Gly | Val | Lys Ser | Ser | |
| 1565 | | | 1570 | | | 1575 | | | |
| Pro Thr | Val Ala | Gly Ser | Cys | His Gln | His Pro | Gln | Thr Ala | Arg | |
| 1580 | | | 1585 | | | 1590 | | | |

| | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|-----|
| Ile Arg | Pro Gln | His Ser | Glu Val | Leu Asn | Ala Glu | Arg Asp | Ala |
| 1595 | | | 1600 | | 1605 | | |
| Arg Cys | Cys Ser | Pro Pro | Thr Pro | Thr Arg | Ser Arg | Ser Arg | Arg |
| 1610 | | | 1615 | | 1620 | | |
| Lys Thr | Ser Arg | Ser Arg | Asn Arg | Pro Arg | Arg Thr | Ser Ser | Arg |
| 1625 | | | 1630 | | 1635 | | |
| Lys Pro | Pro Pro | Ser Arg | Arg Pro | Leu Arg | Arg Arg | Ala Arg | Val |
| 1640 | | | 1645 | | 1650 | | |
| Pro Thr | Ile Trp | Phe Ser | Thr Pro | Pro Met | Pro Arg | Cys Val | Ile |
| 1655 | | | 1660 | | 1665 | | |
| Ala Leu | Ser Ala | Lys Met | Arg Ile | Asp Gln | Ile Glu | Glu Leu | Asp |
| 1670 | | | 1675 | | 1680 | | |
| Ser Ile | Glu Ser | Ile Thr | Asp Gly | Ala Ser | Ser Arg | Arg Asn | Gln |
| 1685 | | | 1690 | | 1695 | | |
| Leu Leu | Val Asp | Leu Gly | Ser Glu | Leu Asn | Leu Gly | Ala Ile | Glu |
| 1700 | | | 1705 | | 1710 | | |
| Arg Arg | Arg Arg | Ile Gly | Pro Gly | Arg Ser | Ala Leu | Thr Gly | Asp |
| 1715 | | | 1720 | | 1725 | | |
| Gln Thr | Gly Ala | His Leu | Gln Arg | Tyr Gly | Pro Val | Leu Ser | Asp |
| 1730 | | | 1735 | | 1740 | | |
| Ala Ile | Asn Asp | His Val | Arg Thr | Val Leu | Gly Pro | Ser Gly | Lys |
| 1745 | | | 1750 | | 1755 | | |
| Arg Pro | Gly Ala | Ile Ala | Glu Arg | Val Lys | Lys Thr | Trp Glu | Leu |
| 1760 | | | 1765 | | 1770 | | |
| Gly Glu | Ala Gly | Pro Ser | Met Ser | Pro Ser | Arg Ser | Arg Trp | Ala |
| 1775 | | | 1780 | | 1785 | | |
| Pro Ala | Arg Ala | Ala Ala | Phe Ala | Ala Ala | Pro Trp | Ala Thr | Cys |
| 1790 | | | 1795 | | 1800 | | |

[illegible]

| | | | | | | | | |
|---------|---------|---------|------|---------|---------|------|---------|-----|
| Val Gly | Gly Gly | Ser Ala | Ala | Arg Arg | Gly Ala | Thr | Val Ile | Ala |
| 2015 | | | 2020 | | | 2025 | | |
| Thr Thr | Ser Lys | Leu Asp | Glu | Glu Arg | Leu Arg | Phe | Tyr Arg | Thr |
| 2030 | | | 2035 | | | 2040 | | |
| Leu Tyr | Arg Asp | His Ala | Arg | Tyr Gly | Ala Ala | Leu | Trp Leu | Val |
| 2045 | | | 2050 | | | 2055 | | |
| Ala Ala | Asn Met | Ala Ser | Tyr | Ser Asp | Val Asp | Ala | Leu Val | Glu |
| 2060 | | | 2065 | | | 2070 | | |
| Trp Ile | Gly Thr | Glu Gln | Thr | Glu Ser | Leu Gly | Pro | Gln Ser | Ile |
| 2075 | | | 2080 | | | 2085 | | |
| His Ile | Lys Asp | Ala Gln | Thr | Pro Thr | Leu Leu | Phe | Arg Ser | Arg |
| 2090 | | | 2095 | | | 2100 | | |
| Arg Thr | Arg Val | Gly Thr | Val | Gly Gly | Arg Phe | Ala | Arg Arg | Asp |
| 2105 | | | 2110 | | | 2115 | | |
| Gly Asp | Glu Ser | Ala Ala | Val | Ala Val | Gln Arg | Leu | Ile Gly | Gly |
| 2120 | | | 2125 | | | 2130 | | |
| Leu Ser | Thr Ile | Gly Ala | Glu | Arg Asp | Met Pro | Ser | Arg Leu | Glu |
| 2135 | | | 2140 | | | 2145 | | |
| Arg Gly | Ala Ala | Arg Leu | Ala | Gln Pro | Trp His | Val | Arg Arg | Arg |
| 2150 | | | 2155 | | | 2160 | | |
| Arg Ala | Leu Arg | Arg Ser | Gln | Val Arg | Ala Gly | Cys | Arg Gly | Asp |
| 2165 | | | 2170 | | | 2175 | | |
| Ala Leu | Ala Arg | Arg Val | Val | Leu Gly | Gly Thr | Gly | Gln Pro | Gly |
| 2180 | | | 2185 | | | 2190 | | |
| Ala Arg | Ala His | Arg Leu | Asp | Pro Arg | His Arg | Ala | Asp Gly | Pro |
| 2195 | | | 2200 | | | 2205 | | |
| Gln Arg | Cys His | Arg Gly | Arg | Arg Arg | Arg Gly | Arg | Gly His | His |
| 2210 | | | 2215 | | | 2220 | | |

| | | | | | | | | |
|---------|---------|---------|------|---------|---------|------|---------|-----|
| Asp Ala | Arg Ala | Phe Val | Glu | Phe Asp | Pro Glu | His | Thr Val | Ile |
| 2435 | | | 2440 | | | | 2445 | |
| Arg Pro | Val Pro | Asp Ser | Thr | Asp Trp | Gln Val | Ile | Arg Lys | Ala |
| 2450 | | | 2455 | | | 2460 | | |
| Gly Thr | Glu Ile | Arg Val | Pro | Arg Lys | Thr Lys | Leu | Ser Arg | Val |
| 2465 | | | 2470 | | | 2475 | | |
| Val Gly | Gly Gln | Ile Pro | Thr | Gly Phe | Asp Pro | Thr | Val Trp | Gly |
| 2480 | | | 2485 | | | 2490 | | |
| Ile Ser | Ala Asp | Met Ala | Gly | Ser Ile | Asp Arg | Leu | Ala Val | Trp |
| 2495 | | | 2500 | | | 2505 | | |
| Asn Met | Trp Arg | Thr Val | Asp | Arg Phe | Leu Ser | Ser | Gly Phe | Ser |
| 2510 | | | 2515 | | | 2520 | | |
| Pro Ala | Glu Val | Met Arg | Tyr | Val His | Pro Ser | Leu | Val Ala | Asn |
| 2525 | | | 2530 | | | 2535 | | |
| Thr Gln | Gly Thr | Gly Met | Gly | Gly Gly | Thr Ser | Met | Gln Thr | Met |
| 2540 | | | 2545 | | | 2550 | | |
| Tyr His | Gly Asn | Leu Leu | Gly | Arg Asn | Lys Pro | Asn | Asp Ile | Phe |
| 2555 | | | 2560 | | | 2565 | | |
| Gln Glu | Val Leu | Pro Ile | Ser | Phe Ala | Ala His | Val | Val Gln | Ser |
| 2570 | | | 2575 | | | 2580 | | |
| Tyr Val | Gly Ser | Tyr Gly | Ala | Met Ile | His Pro | Val | Ala Ala | Cys |
| 2585 | | | 2590 | | | 2595 | | |
| Ala Thr | Ala Ala | Val Ser | Val | Glu Glu | Gly Val | Asp | Lys Ile | Arg |
| 2600 | | | 2605 | | | 2610 | | |
| Leu Gly | Arg Leu | Asn Trp | Trp | Ser Ala | Ala Val | Asp | Asp Leu | Thr |
| 2615 | | | 2620 | | | 2625 | | |
| Leu Glu | Gly Ile | Ile Gly | Phe | Gly Asp | Met Ala | Ala | Thr Ala | Asp |
| 2630 | | | 2635 | | | 2640 | | |

Thr Ser Met Met Arg Gly Arg Gly Ile His Asp Ser Lys Phe Ser
 2645 2650 2655

Arg Pro Asn Asp Arg Arg Arg Leu Ala Ser Ser Lys Pro Lys Ala
 2660 2665 2670

Ala Gly Arg Ser Cys Trp Ala Arg Gly Pro Gly Ala Ala Asp Gly
 2675 2680 2685

Ala Ala Gly Ala Gly Gly Gly Gly Phe Ala Gln Ser Phe Gly Asp
 2690 2695 2700

Gly Val His Thr Ser Ile Arg Pro Gly Pro Gly Arg Ala Gly Gly
 2705 2710 2715

Gly Ala Arg Arg Gln Gly Phe Ser Cys Gly Gly Arg Trp Pro Ser
 2720 2725 2730

Cys Val Ala Ala Asp Asp Val Ala Val Ile Ser Lys His Asp Thr
 2735 2740 2745

Ser Thr Leu Ala Asn Asp Pro Asn Glu Thr Glu Leu His Glu Arg
 2750 2755 2760

Leu Ala Asp Ala Leu Gly Arg Ser Glu Gly Ala Pro Leu Phe Val
 2765 2770 2775

Val Ser Gln Lys Ser Leu Thr Gly Gln Pro Arg Ala Ala Arg Arg
 2780 2785 2790

Ser Ser Arg
 2795

<210> 115
 <211> 192
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(192)
 <223>

```

<400> 115
gat ctt gct gcc cga aac tgc ctg gta ggg gag aac cac ttg gtg aag      48
Asp Leu Ala Ala Arg Asn Cys Leu Val Gly Glu Asn His Leu Val Lys
1          5          10          15

gta gct gat ttt ggc ctg agc agg ttg atg aca ggg gac acc tac aca      96
Val Ala Asp Phe Gly Leu Ser Arg Leu Met Thr Gly Asp Thr Tyr Thr
          20          25          30

gcc cat gct gga gcc aag ttc ccc atc aaa tgg act gca ccc gag agc      144
Ala His Ala Gly Ala Lys Phe Pro Ile Lys Trp Thr Ala Pro Glu Ser
          35          40          45

ctg gcc tac aac aag ttc tcc atc aag tcc gac gtc tgg ggt aag ggc      192
Leu Ala Tyr Asn Lys Phe Ser Ile Lys Ser Asp Val Trp Gly Lys Gly
          50          55          60

```

```
<210> 116
<211> 64
<212> PRT
<213> Homo sapiens
```

```

<400> 116

Asp Leu Ala Ala Arg Asn Cys Leu Val Gly Glu Asn His Leu Val Lys
1          5          10          15

Val Ala Asp Phe Gly Leu Ser Arg Leu Met Thr Gly Asp Thr Tyr Thr
20          25          30

Ala His Ala Gly Ala Lys Phe Pro Ile Lys Trp Thr Ala Pro Glu Ser
35          40          45

Leu Ala Tyr Asn Lys Phe Ser Ile Lys Ser Asp Val Trp Gly Lys Gly
50          55          60

```

```
<210> 117
<211> 3955
<212> DNA
<213> Rattus norvegicus
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```
<220> .
<221> CDS
<222> (17) .. (3799)
<223>
```

```

<400> 117
ccggggccgga gccgca atg atc atc atg gag ctg gcg gcc tgg tgc cgc tgg      52
          Met Ile Ile Met Glu Leu Ala Ala Trp Cys Arg Trp
          1             5             10

```

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ggg | ttc | ctc | ctc | gcc | ctc | ctg | ccc | ccc | gga | atc | gcg | ggc | acc | caa | gtg | 100 |
| Gly | Phe | Leu | Leu | Ala | Leu | Leu | Pro | Pro | Gly | Ile | Ala | Gly | Thr | Gln | Val | |
| | | 15 | | | | | 20 | | | | | 25 | | | | |
| tgt | acc | ggc | aca | gac | atg | aag | ttg | cgg | ctc | cct | gcc | agt | cct | gag | acc | 148 |
| Cys | Thr | Gly | Thr | Asp | Met | Lys | Leu | Arg | Leu | Pro | Ala | Ser | Pro | Glu | Thr | |
| | | 30 | | | | 35 | | | | | 40 | | | | | |
| cac | ctg | gac | atg | ctc | cgc | cac | ctg | tac | cag | ggc | tgt | cag | gta | gtg | cag | 196 |
| His | Leu | Asp | Met | Leu | Arg | His | Leu | Tyr | Gln | Gly | Cys | Gln | Val | Val | Gln | |
| 45 | | | | | 50 | | | | | 55 | | | | | 60 | |
| ggc | aac | ttg | gag | ctt | acc | tac | gtg | cct | gcc | aat | gcc | agc | ctc | tca | ttc | 244 |
| Gly | Asn | Leu | Glu | Leu | Thr | Tyr | Val | Pro | Ala | Asn | Ala | Ser | Leu | Ser | Phe | |
| | | | | 65 | | | | | 70 | | | | | 75 | | |
| ctg | cag | gac | atc | cag | gaa | gtt | cag | ggc | tac | atg | ctc | atc | gct | cac | aac | 292 |
| Leu | Gln | Asp | Ile | Gln | Glu | Val | Gln | Gly | Tyr | Met | Leu | Ile | Ala | His | Asn | |
| | | | 80 | | | | | 85 | | | | | 90 | | | |
| cag | gtg | aag | cgc | gtc | cca | ctg | caa | agg | ctg | cgc | atc | gtg | aga | ggg | acc | 340 |
| Gln | Val | Lys | Arg | Val | Pro | Leu | Gln | Arg | Leu | Arg | Ile | Val | Arg | Gly | Thr | |
| | | 95 | | | | | 100 | | | | | 105 | | | | |
| cag | ctc | ttt | gag | gac | aag | tat | gcc | ctg | gct | gtg | cta | gac | aac | cga | gat | 388 |
| Gln | Leu | Phe | Glu | Asp | Lys | Tyr | Ala | Leu | Ala | Val | Leu | Asp | Asn | Arg | Asp | |
| | 110 | | | | | 115 | | | | | 120 | | | | | |
| cct | cag | gac | aat | gtc | gcc | gcc | tcc | acc | cca | ggc | aga | acc | cca | gag | ggg | 436 |
| Pro | Gln | Asp | Asn | Val | Ala | Ala | Ser | Thr | Pro | Gly | Arg | Thr | Pro | Glu | Gly | |
| 125 | | | | | 130 | | | | | 135 | | | | | 140 | |
| ctg | cgg | gag | ctg | cag | ctt | cga | agt | ctc | aca | gag | atc | ctg | aag | gga | gga | 484 |
| Leu | Arg | Glu | Leu | Gln | Leu | Arg | Ser | Leu | Thr | Glu | Ile | Leu | Lys | Gly | Gly | |
| | | | | 145 | | | | | 150 | | | | | 155 | | |
| gtt | ttg | atc | cgt | ggg | aac | cct | cag | ctc | tgc | tac | cag | gac | atg | gtt | ttg | 532 |
| Val | Leu | Ile | Arg | Gly | Asn | Pro | Gln | Leu | Cys | Tyr | Gln | Asp | Met | Val | Leu | |
| | | | 160 | | | | | 165 | | | | | 170 | | | |
| tgg | aag | gac | gtc | ttc | cgc | aag | aat | aac | caa | ctg | gct | cct | gtc | gat | ata | 580 |
| Trp | Lys | Asp | Val | Phe | Arg | Lys | Asn | Asn | Gln | Leu | Ala | Pro | Val | Asp | Ile | |
| | | 175 | | | | | 180 | | | | | 185 | | | | |
| gac | acc | aat | cgt | tcc | cgg | gcc | tgt | cca | cct | tgt | gcc | ccc | gcc | tgc | aaa | 628 |
| Asp | Thr | Asn | Arg | Ser | Arg | Ala | Cys | Pro | Pro | Cys | Ala | Pro | Ala | Cys | Lys | |
| | | 190 | | | | 195 | | | | | 200 | | | | | |
| gac | aat | cac | tgt | tgg | ggt | gag | agt | cgg | gaa | gac | tgt | cag | atc | ttg | act | 676 |
| Asp | Asn | His | Cys | Trp | Gly | Glu | Ser | Pro | Glu | Asp | Cys | Gln | Ile | Leu | Thr | |
| 205 | | | | | 210 | | | | | 215 | | | | | 220 | |
| | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| act | gac | tgc | tgc | cat | gag | cag | tgt | acc | gca | ggc | tgc | acg | ggc | ccc | aaag | 772 |
| Thr | Asp | Cys | Cys | His | Glu | Gln | Cys | Ala | Ala | Gly | Cys | Thr | Gly | Pro | Lys | |
| | | 240 | | | | | | 245 | | | | | 250 | | | |
| cat | tct | gac | tgc | ctg | gcc | tgc | ctc | cac | ttc | aat | cat | agt | ggg | atc | tgt | 820 |
| His | Ser | Asp | Cys | Leu | Ala | Cys | Leu | His | Phe | Asn | His | Ser | Gly | Ile | Cys | |
| | | 255 | | | | | 260 | | | | | 265 | | | | |
| gag | ctg | cac | tgc | cca | gcc | ctc | gtc | acc | tac | aac | aca | gac | acc | ttt | gag | 868 |
| Glu | Leu | His | Cys | Pro | Ala | Leu | Val | Thr | Tyr | Asn | Thr | Asp | Thr | Phe | Glu | |
| | 270 | | | | | 275 | | | | | 280 | | | | | |
| tcc | atg | cac | aac | cct | gag | ggg | cgc | tac | acc | ttt | ggg | gcc | agc | tgc | gtg | 916 |
| Ser | Met | His | Asn | Pro | Glu | Gly | Arg | Tyr | Thr | Phe | Gly | Ala | Ser | Cys | Val | |
| 285 | | | | | 290 | | | | | 295 | | | | | 300 | |
| acc | acc | tgc | ccc | tac | aac | tac | ctg | tct | acg | gaa | gtg | gga | tcc | tgc | act | 964 |
| Thr | Thr | Cys | Pro | Tyr | Asn | Tyr | Leu | Ser | Thr | Glu | Val | Gly | Ser | Cys | Thr | |
| | | | 305 | | | | | | 310 | | | | | 315 | | |
| ctg | gtg | tgt | ccc | ccg | aat | aac | caa | gag | gtc | aca | gct | gag | gac | gga | aca | 1012 |
| Leu | Val | Cys | Pro | Pro | Asn | Asn | Gln | Glu | Val | Thr | Ala | Glu | Asp | Gly | Thr | |
| | | | 320 | | | | | 325 | | | | | 330 | | | |
| cag | cgt | tgt | gag | aaa | tgc | agc | aag | ccc | tgt | gct | cga | gtg | tgc | tat | ggg | 1060 |
| Gln | Arg | Cys | Glu | Lys | Cys | Ser | Lys | Pro | Cys | Ala | Arg | Val | Cys | Tyr | Gly | |
| | | 335 | | | | | 340 | | | | | 345 | | | | |
| ctg | ggc | atg | gag | cac | ctt | cga | ggg | gcg | agg | ggc | atc | acc | agt | gac | aat | 1108 |
| Leu | Gly | Met | Glu | His | Leu | Arg | Gly | Ala | Arg | Ala | Ile | Thr | Ser | Asp | Asn | |
| | 350 | | | | | 355 | | | | | 360 | | | | | |
| gtc | cag | gag | ttt | gat | ggc | tgc | aag | aag | atc | ttt | ggg | agc | ctg | gca | ttt | 1156 |
| Val | Gln | Glu | Phe | Asp | Gly | Cys | Lys | Lys | Ile | Phe | Gly | Ser | Leu | Ala | Phe | |
| 365 | | | | | 370 | | | | | 375 | | | | | 380 | |
| ttg | ccg | gag | agc | ttt | gat | ggg | gac | ccc | tcc | tcc | ggc | att | gct | ccg | ctg | 1204 |
| Leu | Pro | Glu | Ser | Phe | Asp | Gly | Asp | Pro | Ser | Ser | Gly | Ile | Ala | Pro | Leu | |
| | | | | 385 | | | | | 390 | | | | | 395 | | |
| agg | cct | gag | cag | ctc | caa | gtg | ttc | gaa | acc | ctg | gag | gag | atc | aca | ggg | 1252 |
| Arg | Pro | Glu | Gln | Leu | Gln | Val | Phe | Glu | Thr | Leu | Glu | Glu | Ile | Thr | Gly | |
| | | | 400 | | | | | 405 | | | | | 410 | | | |
| tac | ctg | tac | atc | tca | gca | tgg | cca | gac | agt | ctc | cgt | gac | ctc | agt | gtc | 1300 |
| Tyr | Leu | Tyr | Ile | Ser | Ala | Trp | Pro | Asp | Ser | Leu | Arg | Asp | Leu | Ser | Val | |
| | | 415 | | | | | 420 | | | | | 425 | | | | |
| ttc | cag | aac | ctt | cga | atc | att | cgg | gga | cgg | att | ctc | cac | gat | ggc | gcg | 1348 |
| Phe | Gln | Asn | Leu | Arg | Ile | Ile | Arg | Gly | Arg | Ile | Leu | His | Asp | Gly | Ala | |
| | 430 | | | | | 435 | | | | | 440 | | | | </ | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| tca | ctg | cgg | gag | ctg | ggc | agt | gga | ttg | gct | ctg | att | cac | cgc | aac | gcc | 1444 |
| Ser | Leu | Arg | Glu | Leu | Gly | Ser | Gly | Leu | Ala | Leu | Ile | His | Arg | Asn | Ala | |
| | | | 465 | | | | | | 470 | | | | | 475 | | |
| cat | ctc | tgc | ttt | gta | cac | act | gta | cct | tgg | gac | cag | ctc | ttc | cgg | aac | 1492 |
| His | Leu | Cys | Phe | Val | His | Thr | Val | Pro | Trp | Asp | Gln | Leu | Phe | Arg | Asn | |
| | | | 480 | | | | | 485 | | | | | 490 | | | |
| cca | cat | cag | gcc | ctg | ctc | cac | agt | ggg | aac | cgg | ccg | gaa | gag | gac | ttg | 1540 |
| Pro | His | Gln | Ala | Leu | Leu | His | Ser | Gly | Asn | Arg | Pro | Glu | Glu | Asp | Leu | |
| | | 495 | | | | | 500 | | | | | 505 | | | | |
| tgc | gtc | tgc | agc | ggc | ttg | gtc | tgt | aac | tca | ctg | tgt | gcc | cac | ggg | cac | 1588 |
| Cys | Val | Ser | Ser | Gly | Leu | Val | Cys | Asn | Ser | Leu | Cys | Ala | His | Gly | His | |
| | 510 | | | | | 515 | | | | | 520 | | | | | |
| tgc | tgg | ggg | cca | ggg | ccc | acc | cag | tgt | gtc | aac | tgc | agt | cat | ttc | ctt | 1636 |
| Cys | Trp | Gly | Pro | Gly | Pro | Thr | Gln | Cys | Val | Asn | Cys | Ser | His | Phe | Leu | |
| 525 | | | | | 530 | | | | | 535 | | | | | 540 | |
| cgg | ggc | cag | gag | tgt | gtg | gag | gag | tgc | cga | gta | tgg | aag | ggg | ctc | ccc | 1684 |
| Arg | Gly | Gln | Glu | Cys | Val | Glu | Glu | Cys | Arg | Val | Trp | Lys | Gly | Leu | Pro | |
| | | | 545 | | | | | 550 | | | | | | 555 | | |
| cgg | gag | tat | gtg | agt | gac | aag | cgc | tgt | ctg | ccg | tgt | cac | ccc | gag | tgt | 1732 |
| Arg | Glu | Tyr | Val | Ser | Asp | Lys | Arg | Cys | Leu | Pro | Cys | His | Pro | Glu | Cys | |
| | | 560 | | | | | | 565 | | | | | 570 | | | |
| cag | cct | caa | aac | agc | tca | gag | acc | tgc | ttt | gga | tgc | gag | gct | gat | cag | 1780 |
| Gln | Pro | Gln | Asn | Ser | Ser | Glu | Thr | Cys | Phe | Gly | Ser | Glu | Ala | Asp | Gln | |
| | | 575 | | | | | 580 | | | | | 585 | | | | |
| tgt | gca | gcc | tgc | gcc | cac | tac | aag | gac | tgc | tcc | tcc | tgt | gtg | gct | cgc | 1828 |
| Cys | Ala | Ala | Cys | Ala | His | Tyr | Lys | Asp | Ser | Ser | Ser | Cys | Val | Ala | Arg | |
| | 590 | | | | | 595 | | | | | 600 | | | | | |
| tgc | ccc | agt | ggt | gtg | aaa | ccg | gac | ctc | tcc | tac | atg | ccc | atc | tgg | aag | 1876 |
| Cys | Pro | Ser | Gly | Val | Lys | Pro | Asp | Leu | Ser | Tyr | Met | Pro | Ile | Trp | Lys | |
| 605 | | | | | 610 | | | | | 615 | | | | | 620 | |
| tac | ccg | gat | gag | gag | ggc | ata | tgc | cag | ccg | tgc | ccc | atc | aac | tgc | acc | 1924 |
| Tyr | Pro | Asp | Glu | Glu | Gly | Ile | Cys | Gln | Pro | Cys | Pro | Ile | Asn | Cys | Thr | |
| | | | 625 | | | | | 630 | | | | | | 635 | | |
| cac | tcc | tgt | gtg | gat | ctg | gat | gaa | cga | ggc | tgc | cca | gca | gag | cag | aga | 1972 |
| His | Ser | Cys | Val | Asp | Leu | Asp | Glu | Arg | Gly | Cys | Pro | Ala | Glu | Gln | Arg | |
| | | | 640 | | | | | 645 | | | | | 650 | | | |
| gcc | agc | ccg | gtg | aca | ttc | atc | att | gca | act | gta | gag | ggc | gtc | ctg | ctg | 2020 |
| Ala | Ser | Pro | Val | Thr | Phe | Ile | Ile | Ala | Thr | Val | Glu | Gly | Val | Leu | Leu | |
| | | 655 | | | | | 660 | | | | | 665 | | | | |

| | |
|---|------|
| cag aag atc cgg aag tat acg atg cgt agg ctg ctg cag gaa act gag Gln Lys Ile Arg Lys Tyr Thr Met Arg Arg Leu Leu Gln Glu Thr Glu 685 690 695 700 | 2116 |
| tta gtg gag ccg ctg acg ccc agc gga gca atg ccc aac cag gct cag Leu Val Glu Pro Leu Thr Pro Ser Gly Ala Met Pro Asn Gln Ala Gln 705 710 715 | 2164 |
| atg cgg atc cta aaa gag acg gag cta agg aag gtg aag gtg ctt gga Met Arg Ile Leu Lys Glu Thr Glu Leu Arg Lys Val Lys Val Leu Gly 720 725 730 | 2212 |
| tca gga gct ttt ggc act gtc tac aag ggc atc tgg atc cca gat ggg Ser Gly Ala Phe Gly Thr Val Tyr Lys Gly Ile Trp Ile Pro Asp Gly 735 740 745 | 2260 |
| gag aat gtg aaa atc ccc gtg gct atc aag gtg ttg aga gaa aac aca Glu Asn Val Lys Ile Pro Val Ala Ile Lys Val Leu Arg Glu Asn Thr 750 755 760 | 2308 |
| tct cct aaa gcc aac aaa gaa att cta gat gaa gcg tat gtg atg gct Ser Pro Lys Ala Asn Lys Glu Ile Leu Asp Glu Ala Tyr Val Met Ala 765 770 775 780 | 2356 |
| ggt gtg ggt tct ccg tat gtg tcc cgc ctc ctg ggc atc tgc ctg aca Gly Val Gly Ser Pro Tyr Val Ser Arg Leu Leu Gly Ile Cys Leu Thr 785 790 795 | 2404 |
| tcc aca gta cag ctg gtg aca cag ctt atg ccc tac ggc tgc ctt ctg Ser Thr Val Gln Leu Val Thr Gln Leu Met Pro Tyr Gly Cys Leu Leu 800 805 810 | 2452 |
| gac cat gtc cga gaa cac cga ggt cgc cta ggc tcc cag gac ctg ctc Asp His Val Arg Glu His Arg Gly Arg Leu Gly Ser Gln Asp Leu Leu 815 820 825 | 2500 |
| aac tgg tgt gtt cag att gcc aag ggg atg agc tac ctg gag gac gtg Asn Trp Cys Val Gln Ile Ala Lys Gly Met Ser Tyr Leu Glu Asp Val 830 835 840 | 2548 |
| cgg ctt gta cac agg gac ctg gct gcc cgg aat gtg cta gtc aag agt Arg Leu Val His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys Ser 845 850 855 860 | 2596 |
| ccc aac cac gtc aag att aca gat ttc ggg ctg gct cgg ctg ctg gac Pro Asn His Val Lys Ile Thr Asp Phe Gly Leu Ala Arg Leu Leu Asp 865 870 875 | 2644 |
| att gat gag aca gag tac cat gca gat ggg ggc aag gtg ccc atc aaa Ile Asp Glu Thr Glu Tyr His Ala Asp Gly Gly Lys Val Pro Ile Lys 880 885 890 | 2692 |
| tgg atg gca ttg gaa tct att ctc aga cgc cgg ttc acc cat cag agt Trp Met Ala Leu Glu Ser Ile Leu Arg Arg Arg Phe Thr His Gln Ser 895 900 905 | 2740 |

| | | | | | | | | | | | | | | | | |
|--------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|------|-----|-----|-----|-----|------|
| gat | gtg | tgg | agc | tat | gga | gtg | act | gtg | tgg | gag | ctg | atg | act | ttt | ggg | 2788 |
| Asp | Val | Trp | Ser | Tyr | Gly | Val | Thr | Val | Trp | Glu | Leu | Met | Thr | Phe | Gly | |
| 910 | | | | | | 915 | | | | | | 920 | | | | |
| gcc | aaa | cct | tac | gat | gga | atc | cca | gcc | cgg | gag | atc | cct | gat | ttg | ctg | 2836 |
| Ala | Lys | Pro | Tyr | Asp | Gly | Ile | Pro | Ala | Arg | Glu | Ile | Pro | Asp | Leu | Leu | |
| 925 | | | | | 930 | | | | | 935 | | | | | 940 | |
| gag | aag | gga | gaa | cgc | cta | cct | cag | cct | cca | atc | tgc | acc | att | gat | gtc | 2884 |
| Glu | Lys | Gly | Glu | Arg | Leu | Pro | Gln | Pro | Pro | Ile | Cys | Thr | Ile | Asp | Val | |
| | | | | 945 | | | | | 950 | | | | | 955 | | |
| tac | atg | att | atg | gtc | aaa | tgt | tgg | atg | att | gac | tct | gaa | tgt | cgc | ccg | 2932 |
| Tyr | Met | Ile | Met | Val | Lys | Cys | Trp | Met | Ile | Asp | Ser | Glu | Cys | Arg | Pro | |
| | | | | 960 | | | | 965 | | | | | | 970 | | |
| aga | ttc | cgg | gag | ttg | gtg | tca | gaa | ttt | tca | cgt | atg | gcg | agg | gac | ccc | 2980 |
| Arg | Phe | Arg | Glu | Leu | Val | Ser | Glu | Phe | Ser | Arg | Met | Ala | Arg | Asp | Pro | |
| | | 975 | | | | | 980 | | | | | | | 985 | | |
| cag | cgt | ttt | gtg | gtc | atc | cag | aac | gag | gac | ttg | ggc | cca | tcc | agc | ccc | 3028 |
| Gln | Arg | Phe | Val | Val | Ile | Gln | Asn | Glu | Asp | Leu | Gly | Pro | Ser | Ser | Pro | |
| | | 990 | | | | 995 | | | | | 1000 | | | | | |
| atg | gac | agt | acc | ttc | tac | cgt | tca | ctg | ctg | gaa | gat | gat | gac | atg | | 3073 |
| Met | Asp | Ser | Thr | Phe | Tyr | Arg | Ser | Leu | Leu | Glu | Asp | Asp | Asp | Met | | |
| 1005 | | | | | 1010 | | | | | 1015 | | | | | | |
| ggt | gac | ctg | gta | gac | gct | gaa | gag | tat | ctg | gtg | ccc | cag | cag | gga | | 3118 |
| Gly | Asp | Leu | Val | Asp | Ala | Glu | Glu | Tyr | Leu | Val | Pro | Gln | Gln | Gly | | |
| 1020 | | | | | 1025 | | | | | 1030 | | | | | | |
| ttc | ttc | tcc | ccg | gac | cct | acc | cca | ggc | act | ggg | agc | aca | gcc | cat | | 3163 |
| Phe | Phe | Ser | Pro | Asp | Pro | Thr | Pro | Gly | Thr | Gly | Ser | Thr | Ala | His | | |
| 1035 | | | | | 1040 | | | | | 1045 | | | | | | |
| aga | agg | cac | cgc | agc | tcg | tcc | acc | agg | agt | gga | ggg | ggg | gag | ctg | | 3208 |
| Arg | Arg | His | Arg | Ser | Ser | Ser | Thr | Arg | Ser | Gly | Gly | Gly | Glu | Leu | | |
| 1050 | | | | | 1055 | | | | | 1060 | | | | | | |
| aca | ctg | ggc | ctg | gag | ccc | tcg | gaa | gaa | ggg | ccc | ccc | aga | tct | cca | | 3253 |
| Thr | Leu | Gly | Leu | Glu | Pro | Ser | Glu | Glu | Gly | Pro | Pro | Arg | Ser | Pro | | |
| 1065 | | | | | 1070 | | | | | 1075 | | | | | | |
| ctg | gct | ccc | tcg | gaa | ggg | gct | ggc | tcc | gat | gtg | ttt | gat | ggg | gac | | 3298 |
| Leu | Ala | Pro | Ser | Glu | Gly | Ala | Gly | Ser | Asp | Val | Phe | Asp | Gly | Asp | | |
| 1080 | | | | | 1085 | | | | | 1090 | | | | | | |
| ctg | gca | atg | ggg | gta | acc | aaa | ggg | ctg | cag | agc | ctc | tct | cca | cat | | 3343 |
| Leu | Ala | Met | Gly | Val | Thr | Lys | Gly | Leu | Gln | Ser | Leu | Ser | Pro | His | | |
| 1095</ | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|------------|------------|------------|------------|-------------|------------|------------|-----|-----|-----|------|-----|-----|-----|-----|------|
| ctg | ccc | ccc | gag | act | gat | ggc | tat | gtt | gct | ccc | ctg | gcc | tgc | agc | 3433 |
| Leu | Pro | Pro | Glu | Thr | Asp | Gly | Tyr | Val | Ala | Pro | Leu | Ala | Cys | Ser | |
| 1125 | | | | | 1130 | | | | | 1135 | | | | | |
| ccc | cag | ccc | gag | tat | gtg | aac | caa | tca | gag | gtt | cag | cct | cag | cct | 3478 |
| Pro | Gln | Pro | Glu | Tyr | Val | Asn | Gln | Ser | Glu | Val | Gln | Pro | Gln | Pro | |
| 1140 | | | | | 1145 | | | | | 1150 | | | | | |
| cct | tta | acc | cca | gag | ggt | cct | ctg | cct | cct | gtc | cgg | cct | gct | ggt | 3523 |
| Pro | Leu | Thr | Pro | Glu | Gly | Pro | Leu | Pro | Pro | Val | Arg | Pro | Ala | Gly | |
| 1155 | | | | | 1160 | | | | | 1165 | | | | | |
| gct | act | cta | gaa | aga | ccc | aag | act | ctc | tct | cct | ggg | aag | aat | ggg | 3568 |
| Ala | Thr | Leu | Glu | Arg | Pro | Lys | Thr | Leu | Ser | Pro | Gly | Lys | Asn | Gly | |
| 1170 | | | | | 1175 | | | | | 1180 | | | | | |
| gtt | gtc | aaa | gac | gtt | ttt | gcc | ttc | ggg | ggt | gct | gtg | gag | aac | cct | 3613 |
| Val | Val | Lys | Asp | Val | Phe | Ala | Phe | Gly | Gly | Ala | Val | Glu | Asn | Pro | |
| 1185 | | | | | 1190 | | | | | 1195 | | | | | |
| gaa | tac | tta | gta | ccg | aga | gaa | ggc | act | gcc | tct | ccg | ccc | cac | cct | 3658 |
| Glu | Tyr | Leu | Val | Pro | Arg | Glu | Gly | Thr | Ala | Ser | Pro | Pro | His | Pro | |
| 1200 | | | | | 1205 | | | | | 1210 | | | | | |
| tct | cct | gcc | ttc | agc | cca | gcc | ttt | gac | aac | ctc | tat | tac | tgg | gac | 3703 |
| Ser | Pro | Ala | Phe | Ser | Pro | Ala | Phe | Asp | Asn | Leu | Tyr | Tyr | Trp | Asp | |
| 1215 | | | | | 1220 | | | | | 1225 | | | | | |
| cag | aac | tca | tcg | gag | cag | ggg | cct | cca | cca | agt | aac | ttt | gaa | ggg | 3748 |
| Gln | Asn | Ser | Ser | Glu | Gln | Gly | Pro | Pro | Pro | Ser | Asn | Phe | Glu | Gly | |
| 1230 | | | | | 1235 | | | | | 1240 | | | | | |
| acc | ccc | act | gca | gag | aac | cct | gag | tac | cta | ggc | ctg | gat | gta | cct | 3793 |
| Thr | Pro | Thr | Ala | Glu | Asn | Pro | Glu | Tyr | Leu | Gly | Leu | Asp | Val | Pro | |
| 1245 | | | | | 1250 | | | | | 1255 | | | | | |
| gta | tga | gacgtgtgca | gacgtcctgt | gcttttcagag | tggggaaggc | ctgacttgtg | | | | | | | | | 3849 |
| Val | | | | | | | | | | | | | | | |
| 1260 | | | | | | | | | | | | | | | |
| gtctccatcg | ccacaaagca | gggagagggt | cctctggcca | cattacatcc | agggcagacg | | | | | | | | | | 3909 |
| gctctaccag | gaacctgccc | cgaggaacct | ttccttgctg | cttgaa | | | | | | | | | | | 3955 |

<210> 118
 <211> 1260
 <212> PRT
 <213> Rattus norvegicus

<400> 118

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ile | Ile | Met | Glu | Leu | Ala | Ala | Trp | Cys | Arg | Trp | Gly | Phe | Leu | Leu |
| 1 | | | | 5 | | | | 10 | | | | | 15 | | |

Ala Leu Leu Pro Pro Gly Ile Ala Gly Thr Gln Val Cys Thr Gly Thr
20 25 30

Asp Met Lys Leu Arg Leu Pro Ala Ser Pro Glu Thr His Leu Asp Met
35 40 45

Leu Arg His Leu Tyr Gln Gly Cys Gln Val Val Gln Gly Asn Leu Glu
50 55 60

Leu Thr Tyr Val Pro Ala Asn Ala Ser Leu Ser Phe Leu Gln Asp Ile
65 70 75 80

Gln Glu Val Gln Gly Tyr Met Leu Ile Ala His Asn Gln Val Lys Arg
85 90 95

Val Pro Leu Gln Arg Leu Arg Ile Val Arg Gly Thr Gln Leu Phe Glu
100 105 110

Asp Lys Tyr Ala Leu Ala Val Leu Asp Asn Arg Asp Pro Gln Asp Asn
115 120 125

Val Ala Ala Ser Thr Pro Gly Arg Thr Pro Glu Gly Leu Arg Glu Leu
130 135 140

Gln Leu Arg Ser Leu Thr Glu Ile Leu Lys Gly Gly Val Leu Ile Arg
145 150 155 160

Gly Asn Pro Gln Leu Cys Tyr Gln Asp Met Val Leu Trp Lys Asp Val
165 170 175

Phe Arg Lys Asn Asn Gln Leu Ala Pro Val Asp Ile Asp Thr Asn Arg
180 185 190

Ser Arg Ala Cys Pro Pro Cys Ala Pro Ala Cys Lys Asp Asn His Cys
195 200 205

Trp Gly Glu Ser Pro Glu Asp Cys Gln Ile Leu Thr Gly Thr Ile Cys
210 215 220

Thr Ser Gly Cys Ala Arg Cys Lys Gly Arg Leu Pro Thr Asp Cys Cys
225 230 235 240

Leu Gly Ser Gly Leu Ala Leu Ile His Arg Asn Ala His Leu Cys Phe
465 470 475 480

Val His Thr Val Pro Trp Asp Gln Leu Phe Arg Asn Pro His Gln Ala
485 490 495

Leu Leu His Ser Gly Asn Arg Pro Glu Glu Asp Leu Cys Val Ser Ser
500 505 510

Gly Leu Val Cys Asn Ser Leu Cys Ala His Gly His Cys Trp Gly Pro
515 520 525

Gly Pro Thr Gln Cys Val Asn Cys Ser His Phe Leu Arg Gly Gln Glu
530 535 540

Cys Val Glu Glu Cys Arg Val Trp Lys Gly Leu Pro Arg Glu Tyr Val
545 550 555 560

Ser Asp Lys Arg Cys Leu Pro Cys His Pro Glu Cys Gln Pro Gln Asn
565 570 575

Ser Ser Glu Thr Cys Phe Gly Ser Glu Ala Asp Gln Cys Ala Ala Cys
580 585 590

Ala His Tyr Lys Asp Ser Ser Ser Cys Val Ala Arg Cys Pro Ser Gly
595 600 605

Val Lys Pro Asp Leu Ser Tyr Met Pro Ile Trp Lys Tyr Pro Asp Glu
610 615 620

Glu Gly Ile Cys Gln Pro Cys Pro Ile Asn Cys Thr His Ser Cys Val
625 630 635 640

Asp Leu Asp Glu Arg Gly Cys Pro Ala Glu Gln Arg Ala Ser Pro Val
645 650 655

Thr Phe Ile Ile Ala Thr Val Glu Gly Val Leu Leu Phe Leu Ile Leu
660 665 670

Val Val Val Val Gly Ile Leu Ile Lys Arg Arg Arg Gln Lys Ile Arg
675 680 685

Lys Tyr Thr Met Arg Arg Leu Leu Gln Glu Thr Glu Leu Val Glu Pro
690 695 700

Leu Thr Pro Ser Gly Ala Met Pro Asn Gln Ala Gln Met Arg Ile Leu
705 710 715 720

Lys Glu Thr Glu Leu Arg Lys Val Lys Val Leu Gly Ser Gly Ala Phe
725 730 735

Gly Thr Val Tyr Lys Gly Ile Trp Ile Pro Asp Gly Glu Asn Val Lys
740 745 750

Ile Pro Val Ala Ile Lys Val Leu Arg Glu Asn Thr Ser Pro Lys Ala
755 760 765

Asn Lys Glu Ile Leu Asp Glu Ala Tyr Val Met Ala Gly Val Gly Ser
770 775 780

Pro Tyr Val Ser Arg Leu Leu Gly Ile Cys Leu Thr Ser Thr Val Gln
785 790 795 800

Leu Val Thr Gln Leu Met Pro Tyr Gly Cys Leu Leu Asp His Val Arg
805 810 815

Glu His Arg Gly Arg Leu Gly Ser Gln Asp Leu Leu Asn Trp Cys Val
820 825 830

Gln Ile Ala Lys Gly Met Ser Tyr Leu Glu Asp Val Arg Leu Val His
835 840 845

Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys Ser Pro Asn His Val
850 855 860

Lys Ile Thr Asp Phe Gly Leu Ala Arg Leu Leu Asp Ile Asp Glu Thr
865 870 875 880

Glu Tyr His Ala Asp Gly Gly Lys Val Pro Ile Lys Trp Met Ala Leu
885 890 895

Glu Ser Ile Leu Arg Arg Arg Phe Thr His Gln Ser Asp Val Trp Ser
900 905 910

Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe Gly Ala Lys Pro Tyr
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Asp Gly Ile Pro Ala Arg Glu Ile Pro Asp Leu Leu Glu Lys Gly Glu
 930 935 940

Arg Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp Val Tyr Met Ile Met
 945 950 955 960

Val Lys Cys Trp Met Ile Asp Ser Glu Cys Arg Pro Arg Phe Arg Glu
 965 970 975

Leu Val Ser Glu Phe Ser Arg Met Ala Arg Asp Pro Gln Arg Phe Val
 980 985 990

Val Ile Gln Asn Glu Asp Leu Gly Pro Ser Ser Pro Met Asp Ser Thr
 995 1000 1005

Phe Tyr Arg Ser Leu Leu Glu Asp Asp Asp Met Gly Asp Leu Val
 1010 1015 1020

Asp Ala Glu Glu Tyr Leu Val Pro Gln Gln Gly Phe Phe Ser Pro
 1025 1030 1035

Asp Pro Thr Pro Gly Thr Gly Ser Thr Ala His Arg Arg His Arg
 1040 1045 1050

Ser Ser Ser Thr Arg Ser Gly Gly Gly Glu Leu Thr Leu Gly Leu
 1055 1060 1065

Glu Pro Ser Glu Glu Gly Pro Pro Arg Ser Pro Leu Ala Pro Ser
 1070 1075 1080

Glu Gly Ala Gly Ser Asp Val Phe Asp Gly Asp Leu Ala Met Gly
 1085 1090 1095

Val Thr Lys Gly Leu Gln Ser Leu Ser Pro His Asp Leu Ser Pro
 1100 1105 1110

Leu Gln Arg Tyr Ser Glu Asp Pro Thr Leu Pro Leu Pro Pro Glu
 1115 1120 1125

| | |
|--|-----|
| gcc gcg ctc tcg ctc tgg ccg acg agt gga gaa atc tgc ggg cca ggc | 153 |
| Ala Ala Leu Ser Leu Trp Pro Thr Ser Gly Glu Ile Cys Gly Pro Gly | |
| 25 30 35 | |
| atc gac atc cgc aac gac tat cag cag ctg aag cgc ctg gag aac tgc | 201 |
| Ile Asp Ile Arg Asn Asp Tyr Gln Gln Leu Lys Arg Leu Glu Asn Cys | |
| 40 45 50 | |
| acg gtg atc gag ggc tac ctc cac atc ctg ctc atc tcc aag gcc gag | 249 |
| Thr Val Ile Glu Gly Tyr Leu His Ile Leu Leu Ile Ser Lys Ala Glu | |
| 55 60 65 | |
| gac tac cgc agc tac cgc ttc ccc aag ctc acg gtc att acc gag tac | 297 |
| Asp Tyr Arg Ser Tyr Arg Phe Pro Lys Leu Thr Val Ile Thr Glu Tyr | |
| 70 75 80 | |
| ttg ctg ctg ttc cga gtg gct ggc ctc gag agc ctc gga gac ctc ttc | 345 |
| Leu Leu Leu Phe Arg Val Ala Gly Leu Glu Ser Leu Gly Asp Leu Phe | |
| 85 90 95 100 | |
| ccc aac ctc acg gtc atc cgc ggc tgg aaa ctc ttc tac aac tac gcc | 393 |
| Pro Asn Leu Thr Val Ile Arg Gly Trp Lys Leu Phe Tyr Asn Tyr Ala | |
| 105 110 115 | |
| ctg gtc atc ttc gag atg acc aat ctc aag gat att ggg ctt tac aac | 441 |
| Leu Val Ile Phe Glu Met Thr Asn Leu Lys Asp Ile Gly Leu Tyr Asn | |
| 120 125 130 | |
| ctg agg aac att act cgg ggg gcc atc agg att gag aaa aat gct gac | 489 |
| Leu Arg Asn Ile Thr Arg Gly Ala Ile Arg Ile Glu Lys Asn Ala Asp | |
| 135 140 145 | |
| ctc tgt tac ctc tcc act gtg gac tgg tcc ctg atc ctg gat gcg gtg | 537 |
| Leu Cys Tyr Leu Ser Thr Val Asp Trp Ser Leu Ile Leu Asp Ala Val | |
| 150 155 160 | |
| tcc aat aac tac att gtg ggg aat aag ccc cca aag gaa tgt ggg gac | 585 |
| Ser Asn Asn Tyr Ile Val Gly Asn Lys Pro Pro Lys Glu Cys Gly Asp | |
| 165 170 175 180 | |
| ctg tgt cca ggg acc atg gag gag aag ccg atg tgt gag aag acc acc | 633 |
| Leu Cys, Pro Gly Thr Met Glu Glu Lys Pro Met Cys Glu Lys Thr Thr | |
| 185 190 195 | |
| atc aac aat gag tac aac tac cgc tgc tgg acc aca aac cgc tgc cag | 681 |
| Ile Asn Asn Glu Tyr Asn Tyr Arg Cys Trp Thr Thr Asn Arg Cys Gln | |
| 200 205 210 | |
| aaa atg tgc cca agc acg tgt ggg aag cgg gcg tgc acc gag aac aat | 729 |
| Lys Met Cys Pro Ser Thr Cys Gly Lys Arg Ala Cys Thr Glu Asn Asn | |
| 215 220 225 | |
| gag tgc tgc cac ccc gag tgc ctg ggc agc tgc agc gcg cct gac aac | 777 |
| Glu Cys Cys His Pro Glu Cys Leu Gly Ser Cys Ser Ala Pro Asp Asn | |
| 230 235 240 | |

| | |
|--|------|
| gac acg gcc tgt gta gct tgc cgc cac tac tac tat gcc ggt gtc tgt | 825 |
| Asp Thr Ala Cys Val Ala Cys Arg His Tyr Tyr Tyr Ala Gly Val Cys | |
| 245 250 255 260 | |
| gtg cct gcc tgc ccg ccc aac acc tac agg ttt gag ggc tgg cgc tgt | 873 |
| Val Pro Ala Cys Pro Pro Asn Thr Tyr Arg Phe Glu Gly Trp Arg Cys | |
| 265 270 275 | |
| gtg gac cgt gac ttc tgc gcc aac atc ctc agc gcc gag agc agc gac | 921 |
| Val Asp Arg Asp Phe Cys Ala Asn Ile Leu Ser Ala Glu Ser Ser Asp | |
| 280 285 290 | |
| tcc gag ggg ttt gtg atc cac gac ggc gag tgc atg cag gag tgc ccc | 969 |
| Ser Glu Gly Phe Val Ile His Asp Gly Glu Cys Met Gln Glu Cys Pro | |
| 295 300 305 | |
| tcg ggc ttc atc cgc aac ggc agc cag agc atg tac tgc atc cct tgt | 1017 |
| Ser Gly Phe Ile Arg Asn Gly Ser Gln Ser Met Tyr Cys Ile Pro Cys | |
| 310 315 320 | |
| gaa ggt cct tgc ccg aag gtc tgt gag gaa gaa aag aaa aca aag acc | 1065 |
| Glu Gly Pro Cys Pro Lys Val Cys Glu Glu Glu Lys Lys Thr Lys Thr | |
| 325 330 335 340 | |
| att gat tct gtt act tct gct cag atg ctc caa gga tgc acc atc ttc | 1113 |
| Ile Asp Ser Val Thr Ser Ala Gln Met Leu Gln Gly Cys Thr Ile Phe | |
| 345 350 355 | |
| aag ggc aat ttg ctc att aac atc cga cgg ggg aat aac att gct tca | 1161 |
| Lys Gly Asn Leu Leu Ile Asn Ile Arg Arg Gly Asn Asn Ile Ala Ser | |
| 360 365 370 | |
| gag ctg gag aac ttc atg ggc ctc atc gag gtg gtg acg ggc tac gtg | 1209 |
| Glu Leu Glu Asn Phe Met Gly Leu Ile Glu Val Val Thr Gly Tyr Val | |
| 375 380 385 | |
| aag atc cgc cat tct cat gcc ttg gtc tcc ttg tcc ttc cta aaa aac | 1257 |
| Lys Ile Arg His Ser His Ala Leu Val Ser Leu Ser Phe Leu Lys Asn | |
| 390 395 400 | |
| ctt cgc ctc atc cta gga gag gag cag cta gaa ggg aat tac tcc ttc | 1305 |
| Leu Arg, Leu Ile Leu Gly Glu Glu Gln Leu Glu Gly Asn Tyr Ser Phe | |
| 405 410 415 420 | |
| tac gtc ctc gac aac cag aac ttg cag caa ctg tgg gac tgg gac cac | 1353 |
| Tyr Val Leu Asp Asn Gln Asn Leu Gln Gln Leu Trp Asp Trp Asp His | |
| 425 430 435 | |
| cgc aac ctg acc atc aaa gca ggg aaa atg tac ttt gct ttc aat ccc | 1401 |
| Arg Asn Leu Thr Ile Lys Ala Gly Lys Met Tyr Phe Ala Phe Asn Pro | |
| 440 445 450 | |
| aaa tta tgt gtt tcc gaa att tac cgc atg gag gaa gtg acg ggg act | 1449 |
| Lys Leu Cys Val Ser Glu Ile Tyr Arg Met Glu Glu Val Thr Gly Thr | |
| 455 460 465 | |

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|---|------|
| aaa ggg cgc caa agc aaa ggg gac ata aac acc agg aac aac ggg gag Lys Gly Arg Gln Ser Lys Gly Asp Ile Asn Thr Arg Asn Asn Gly Glu 470 475 480 | 1497 |
| aga gcc tcc tgt gaa agt gac gtc ctg cat ttc acc tcc acc acc acg Arg Ala Ser Cys Glu Ser Asp Val Leu His Phe Thr Ser Thr Thr Thr 485 490 495 500 | 1545 |
| tcg aag aat cgc atc atc ata acc tgg cac cgg tac cgg ccc cct gac Ser Lys Asn Arg Ile Ile Ile Thr Trp His Arg Tyr Arg Pro Pro Asp 505 510 515 | 1593 |
| tac agg gat ctc atc agc ttc acc gtt tac tac aag gaa gca ccc ttt Tyr Arg Asp Leu Ile Ser Phe Thr Val Tyr Tyr Lys Glu Ala Pro Phe 520 525 530 | 1641 |
| aag aat gtc aca gag tat gat ggg cag gat gcc tgc ggc tcc aac agc Lys Asn Val Thr Glu Tyr Asp Gly Gln Asp Ala Cys Gly Ser Asn Ser 535 540 545 | 1689 |
| tgg aac atg gtg gac gtg gac ctc ccg ccc aac aag gac gtg gag ccc Trp Asn Met Val Asp Val Asp Leu Pro Pro Asn Lys Asp Val Glu Pro 550 555 560 | 1737 |
| ggc atc tta cta cat ggg ctg aag ccc tgg act cag tac gcc gtt tac Gly Ile Leu Leu His Gly Leu Lys Pro Trp Thr Gln Tyr Ala Val Tyr 565 570 575 580 | 1785 |
| gtc aag gct gtg acc ctc acc atg gtg gag aac gac cat atc cgt ggg Val Lys Ala Val Thr Leu Thr Met Val Glu Asn Asp His Ile Arg Gly 585 590 595 | 1833 |
| gcc aag agt gag atc ttg tac att cgc acc aat gct tca gtt cct tcc Ala Lys Ser Glu Ile Leu Tyr Ile Arg Thr Asn Ala Ser Val Pro Ser 600 605 610 | 1881 |
| att ccc ttg gac gtt ctt tca gca tcg aac tcc tct tct cag tta atc Ile Pro Leu Asp Val Leu Ser Ala Ser Asn Ser Ser Ser Gln Leu Ile 615 620 625 | 1929 |
| gtg aag tgg aac cct ccc tct ctg ccc aac ggc aac ctg agt tac tac Val Lys Trp Asn Pro Pro Ser Leu Pro Asn Gly Asn Leu Ser Tyr Tyr 630 635 640 | 1977 |
| att gtg cgc tgg cag cgg cag cct cag gac ggc tac ctt tac cgg cac Ile Val Arg Trp Gln Arg Gln Pro Gln Asp Gly Tyr Leu Tyr Arg His 645 650 655 660 | 2025 |
| aat tac tgc tcc aaa gac aaa atc ccc atc agg aag tat gcc gac ggc Asn Tyr Cys Ser Lys Asp Lys Ile Pro Ile Arg Lys Tyr Ala Asp Gly 665 670 675 | 2073 |
| acc atc gac att gag gag gtc aca gag aac ccc aag act gag gtg tgt Thr Ile Asp Ile Glu Glu Val Thr Glu Asn Pro Lys Thr Glu Val Cys 680 685 690 | 2121 |

| | |
|---|------|
| ggt ggg gag aaa ggg cct tgc tgc gcc tgc ccc aaa act gaa gcc gag Gly Gly Glu Lys Gly Pro Cys Cys Ala Cys Pro Lys Thr Glu Ala Glu 695 700 705 | 2169 |
| aag cag gcc gag aag gag gag gct gaa tac cgc aaa gtc ttt gag aat Lys Gln Ala Glu Lys Glu Glu Ala Glu Tyr Arg Lys Val Phe Glu Asn 710 715 720 | 2217 |
| ttc ctg cac aac tcc atc ttc gtg ccc aga cct gaa agg aag cgg aga Phe Leu His Asn Ser Ile Phe Val Pro Arg Pro Glu Arg Lys Arg Arg 725 730 735 740 | 2265 |
| gat gtc atg caa gtg gcc aac acc acc atg tcc agc cga agc agg aac Asp Val Met Gln Val Ala Asn Thr Thr Met Ser Ser Arg Ser Arg Asn 745 750 755 | 2313 |
| acc acg gcc gca gac acc tac aac atc acc gac ccg gaa gag ctg gag Thr Thr Ala Ala Asp Thr Tyr Asn Ile Thr Asp Pro Glu Glu Leu Glu 760 765 770 | 2361 |
| aca gag tac cct ttc ttt gag agc aga gtg gat aac aag gag aga act Thr Glu Tyr Pro Phe Phe Glu Ser Arg Val Asp Asn Lys Glu Arg Thr 775 780 785 | 2409 |
| gtc att tct aac ctt cgg cct ttc aca ttg tac cgc atc gat atc cac Val Ile Ser Asn Leu Arg Pro Phe Thr Leu Tyr Arg Ile Asp Ile His 790 795 800 | 2457 |
| agc tgc aac cac gag gct gag aag ctg ggc tgc agc gcc tcc aac ttc Ser Cys Asn His Glu Ala Glu Lys Leu Gly Cys Ser Ala Ser Asn Phe 805 810 815 820 | 2505 |
| gtc ttt gca agg act atg ccc gca gaa gga gca gat gac att cct ggg Val Phe Ala Arg Thr Met Pro Ala Glu Gly Ala Asp Asp Ile Pro Gly 825 830 835 | 2553 |
| cca gtg acc tgg gag cca agg cct gaa aac tcc atc ttt tta aag tgg Pro Val Thr Trp Glu Pro Arg Pro Glu Asn Ser Ile Phe Leu Lys Trp 840 845 850 | 2601 |
| ccg gaa cct gag aat ccc aat gga ttg att cta atg tat gaa ata aaa Pro Glu Pro Glu Asn Pro Asn Gly Leu Ile Leu Met Tyr Glu Ile Lys 855 860 865 | 2649 |
| tac gga tca caa gtt gag gat cag cga gaa tgt gtg tcc aga cag gaa Tyr Gly Ser Gln Val Glu Asp Gln Arg Glu Cys Val Ser Arg Gln Glu 870 875 880 | 2697 |
| tac agg aag tat gga ggg gcc aag cta aac cgg cta aac ccg ggg aac Tyr Arg Lys Tyr Gly Gly Ala Lys Leu Asn Arg Leu Asn Pro Gly Asn 885 890 895 900 | 2745 |
| tac aca gcc cgg att cag gcc aca tct ctc tct ggg aat ggg tcg tgg Tyr Thr Ala Arg Ile Gln Ala Thr Ser Leu Ser Gly Asn Gly Ser Trp 905 910 915 | 2793 |

| | |
|---|------|
| aca gat cct gtg ttc ttc tat gtc cag gcc aaa aca gga tat gaa aac | 2841 |
| Thr Asp Pro Val Phe Phe Tyr Val Gln Ala Lys Thr Gly Tyr Glu Asn | |
| 920 925 930 | |
| ttc atc cat ctg atc atc gct ctg ccc gtc gct gtc ctg ttg atc gtg | 2889 |
| Phe Ile His Leu Ile Ile Ala Leu Pro Val Ala Val Leu Leu Ile Val | |
| 935 940 945 | |
| gga ggg ttg gtg att atg ctg tac gtc ttc cat aga aag aga aat aac | 2937 |
| Gly Gly Leu Val Ile Met Leu Tyr Val Phe His Arg Lys Arg Asn Asn | |
| 950 955 960 | |
| agc agg ctg ggg aat gga gtg ctg tat gcc tct gtg aac ccg gag tac | 2985 |
| Ser Arg Leu Gly Asn Gly Val Leu Tyr Ala Ser Val Asn Pro Glu Tyr | |
| 965 970 975 980 | |
| ttc agc gct gct gat gtg tac gtt cct gat gag tgg gag gtg gct cgg | 3033 |
| Phe Ser Ala Ala Asp Val Tyr Val Pro Asp Glu Trp Glu Val Ala Arg | |
| 985 990 995 | |
| gag aag atc acc atg agc cgg gaa ctt ggg cag ggg tcg ttt ggg | 3078 |
| Glu Lys Ile Thr Met Ser Arg Glu Leu Gly Gln Gly Ser Phe Gly | |
| 1000 1005 1010 | |
| atg gtc tat gaa gga gtt gcc aag ggt gtg gtg aaa gat gaa cct | 3123 |
| Met Val Tyr Glu Gly Val Ala Lys Gly Val Val Lys Asp Glu Pro | |
| 1015 1020 1025 | |
| gaa acc aga gtg gcc att aaa aca gtg aac gag gcc gca agc atg | 3168 |
| Glu Thr Arg Val Ala Ile Lys Thr Val Asn Glu Ala Ala Ser Met | |
| 1030 1035 1040 | |
| cgt gag agg att gag ttt ctc aac gaa gct tct gtg atg aag gag | 3213 |
| Arg Glu Arg Ile Glu Phe Leu Asn Glu Ala Ser Val Met Lys Glu | |
| 1045 1050 1055 | |
| ttc aat tgt cac cat gtg gtg cga ttg ctg ggt gtg gtg tcc caa | 3258 |
| Phe Asn Cys His His Val Val Arg Leu Leu Gly Val Val Ser Gln | |
| 1060 1065 1070 | |
| ggc cag cca aca ctg gtc atc atg gaa ctg atg aca cgg ggc gat | 3303 |
| Gly Gln Pro Thr Leu Val Ile Met Glu Leu Met Thr Arg Gly Asp | |
| 1075 1080 1085 | |
| ctc aaa agt tat ctc cgg tct ctg agg cca gaa atg gag aat aat | 3348 |
| Leu Lys Ser Tyr Leu Arg Ser Leu Arg Pro Glu Met Glu Asn Asn | |
| 1090 1095 1100 | |
| cca gtc cta gca cct cca agc ctg agc aag atg att cag atg gcc | 3393 |
| Pro Val Leu Ala Pro Pro Ser Leu Ser Lys Met Ile Gln Met Ala | |
| 1105 1110 1115 | |
| gga gag att gca gac ggc atg gca tac ctc aac gcc aat aag ttc | 3438 |
| Gly Glu Ile Ala Asp Gly Met Ala Tyr Leu Asn Ala Asn Lys Phe | |
| 1120 1125 1130 | |

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|-----------------|---------------------|-------------------------|------|
| gtc cac aga gac | ctt gct gcc cgg aat | tgc atg gta gcc gaa gat | 3483 |
| Val His Arg Asp | Leu Ala Ala Arg Asn | Cys Met Val Ala Glu Asp | |
| 1135 | 1140 | 1145 | |
| ttc aca gtc aaa | atc gga gat ttt ggt | atg acg cga gat atc tat | 3528 |
| Phe Thr Val Lys | Ile Gly Asp Phe Gly | Met Thr Arg Asp Ile Tyr | |
| 1150 | 1155 | 1160 | |
| gag aca gac tat | tac cgg aaa gga ggc | aaa ggg ctg ctg ccc gtg | 3573 |
| Glu Thr Asp Tyr | Tyr Arg Lys Gly Gly | Lys Gly Leu Leu Pro Val | |
| 1165 | 1170 | 1175 | |
| cgc tgg atg tct | cct gag tcc ctc aag | gat gga gtc ttc acc act | 3618 |
| Arg Trp Met Ser | Pro Glu Ser Leu Lys | Asp Gly Val Phe Thr Thr | |
| 1180 | 1185 | 1190 | |
| tac tgg gac gtc | tgg tcc ttc ggg gtc | gtc ctc tgg gag atc gcc | 3663 |
| Tyr Ser Asp Val | Trp Ser Phe Gly Val | Val Leu Trp Glu Ile Ala | |
| 1195 | 1200 | 1205 | |
| aca ctg gcc gag | cag ccc tac cag ggc | ttg tcc aac gag caa gtc | 3708 |
| Thr Leu Ala Glu | Gln Pro Tyr Gln Gly | Leu Ser Asn Glu Gln Val | |
| 1210 | 1215 | 1220 | |
| ctt cgc ttc gtc | atg gag ggc ggc ctt | ctg gac aag cca gac aac | 3753 |
| Leu Arg Phe Val | Met Glu Gly Gly Leu | Leu Asp Lys Pro Asp Asn | |
| 1225 | 1230 | 1235 | |
| tgt cct gac atg | ctg ttt gaa ctg atg | cgc atg tgc tgg cag tat | 3798 |
| Cys Pro Asp Met | Leu Phe Glu Leu Met | Arg Met Cys Trp Gln Tyr | |
| 1240 | 1245 | 1250 | |
| aac ccc aag atg | agg cct tcc ttc ctg | gag atc atc agc agc atc | 3843 |
| Asn Pro Lys Met | Arg Pro Ser Phe Leu | Glu Ile Ile Ser Ser Ile | |
| 1255 | 1260 | 1265 | |
| aaa gag gag atg | gag cct ggc ttc cgg | gag gtc tcc ttc tac tac | 3888 |
| Lys Glu Glu Met | Glu Pro Gly Phe Arg | Glu Val Ser Phe Tyr Tyr | |
| 1270 | 1275 | 1280 | |
| agc gag gag aac | aag ctg ccc gag ccg | gag gag ctg gac ctg gag | 3933 |
| Ser Glu Glu Asn | Lys Leu Pro Glu Pro | Glu Glu Leu Asp Leu Glu | |
| 1285 | 1290 | 1295 | |
| cca gag aac atg | gag agc gtc ccc ctg | gac ccc tgc gcc tcc tgc | 3978 |
| Pro Glu Asn Met | Glu Ser Val Pro Leu | Asp Pro Ser Ala Ser Ser | |
| 1300 | 1305 | 1310 | |
| tcc tcc ctg cca | ctg ccc gac aga cac | tca gga cac aag gcc gag | 4023 |
| Ser Ser Leu Pro | Leu Pro Asp Arg His | Ser Gly His Lys Ala Glu | |
| 1315 | 1320 | 1325 | |
| aac ggc ccc ggc | cct ggg gtg ctg gtc | ctc cgc gcc agc ttc gac | 4068 |
| Asn Gly Pro Gly | Pro Gly Val Leu Val | Leu Arg Ala Ser Phe Asp | |
| 1330 | 1335 | 1340 | |

gag aga cag cct tac gcc cac atg aac ggg ggc cgc aag aac gag 4113
 Glu Arg Gln Pro Tyr Ala His Met Asn Gly Gly Arg Lys Asn Glu
 1345 1350 1355

cgg gcc ttg ccg ctg ccc cag tct tcg acc tgc tga tccttggatc 4159
 Arg Ala Leu Pro Leu Pro Gln Ser Ser Thr Cys
 1360 1365

ctgaatctgt gcaaacagta acgtgtgctc acgcgcagcg ggggtggggg ggagagagag 4219

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gcccgcggga gacagcttct ctgcagtaaa acacatttgg gatgttcctt ttttcaatat 4339

gcaagcagct ttttattccc tgcccaaacc cttaactgac atgggccttt aagaacctta 4399

atgacaacac ttaatagcaa cagagcactt gagaaccagt ctctcactc tgtccctgtc 4459

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aaccactgta cacacccgcc tgacaccgtg ggtcattaca aaaaaacacg tggagatgga 4639

aatttttacc tttatctttc acctttctag ggacatgaaa tttacaaagg gccatcgttc 4699

atccaaggct gttaccattt taacgctgcc taattttgcc aaaatcctga actttctccc 4759

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<213> Homo sapiens

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Cys Gly Pro Gly Ile Asp Ile Arg Asn Asp Tyr Gln Gln Leu Lys Arg
 35 40 45

Leu Glu Asn Cys Thr Val Ile Glu Gly Tyr Leu His Ile Leu Leu Ile
50 55 60

Ser Lys Ala Glu Asp Tyr Arg Ser Tyr Arg Phe Pro Lys Leu Thr Val
65 70 75 80

Ile Thr Glu Tyr Leu Leu Leu Phe Arg Val Ala Gly Leu Glu Ser Leu
85 90 95

Gly Asp Leu Phe Pro Asn Leu Thr Val Ile Arg Gly Trp Lys Leu Phe
100 105 110

Tyr Asn Tyr Ala Leu Val Ile Phe Glu Met Thr Asn Leu Lys Asp Ile
115 120 125

Gly Leu Tyr Asn Leu Arg Asn Ile Thr Arg Gly Ala Ile Arg Ile Glu
130 135 140

Lys Asn Ala Asp Leu Cys Tyr Leu Ser Thr Val Asp Trp Ser Leu Ile
145 150 155 160

Leu Asp Ala Val Ser Asn Asn Tyr Ile Val Gly Asn Lys Pro Pro Lys
165 170 175

Glu Cys Gly Asp Leu Cys Pro Gly Thr Met Glu Glu Lys Pro Met Cys
180 185 190

Glu Lys Thr Thr Ile Asn Asn Glu Tyr Asn Tyr Arg Cys Trp Thr Thr
195 200 205

Asn Arg Cys Gln Lys Met Cys Pro Ser Thr Cys Gly Lys Arg Ala Cys
210 215 220

Thr Glu Asn Asn Glu Cys Cys His Pro Glu Cys Leu Gly Ser Cys Ser
225 230 235 240

Ala Pro Asp Asn Asp Thr Ala Cys Val Ala Cys Arg His Tyr Tyr Tyr
245 250 255

Ala Gly Val Cys Val Pro Ala Cys Pro Pro Asn Thr Tyr Arg Phe Glu
260 265 270

Gly Trp Arg Cys Val Asp Arg Asp Phe Cys Ala Asn Ile Leu Ser Ala
 275 280 285

Glu Ser Ser Asp Ser Glu Gly Phe Val Ile His Asp Gly Glu Cys Met
 290 295 300

Gln Glu Cys Pro Ser Gly Phe Ile Arg Asn Gly Ser Gln Ser Met Tyr
 305 310 315 320

Cys Ile Pro Cys Glu Gly Pro Cys Pro Lys Val Cys Glu Glu Glu Lys
 325 330 335

Lys Thr Lys Thr Ile Asp Ser Val Thr Ser Ala Gln Met Leu Gln Gly
 340 345 350

Cys Thr Ile Phe Lys Gly Asn Leu Leu Ile Asn Ile Arg Arg Gly Asn
 355 360 365

Asn Ile Ala Ser Glu Leu Glu Asn Phe Met Gly Leu Ile Glu Val Val
 370 375 380

Thr Gly Tyr Val Lys Ile Arg His Ser His Ala Leu Val Ser Leu Ser
 385 390 395 400

Phe Leu Lys Asn Leu Arg Leu Ile Leu Gly Glu Glu Gln Leu Glu Gly
 405 410 415

Asn Tyr Ser Phe Tyr Val Leu Asp Asn Gln Asn Leu Gln Gln Leu Trp
 420 425 430

Asp Trp Asp His Arg Asn Leu Thr Ile Lys Ala Gly Lys Met Tyr Phe
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Ala Phe Asn Pro Lys Leu Cys Val Ser Glu Ile Tyr Arg Met Glu Glu
 450 455 460

Val Thr Gly Thr Lys Gly Arg Gln Ser Lys Gly Asp Ile Asn Thr Arg
 465 470 475 480

Asn Asn Gly Glu Arg Ala Ser Cys Glu Ser Asp Val Leu His Phe Thr
 485 490 495

Ser Thr Thr Thr Ser Lys Asn Arg Ile Ile Ile Thr Trp His Arg Tyr
500 505 510

Arg Pro Pro Asp Tyr Arg Asp Leu Ile Ser Phe Thr Val Tyr Tyr Lys
515 520 525

Glu Ala Pro Phe Lys Asn Val Thr Glu Tyr Asp Gly Gln Asp Ala Cys
530 535 540

Gly Ser Asn Ser Trp Asn Met Val Asp Val Asp Leu Pro Pro Asn Lys
545 550 555 560

Asp Val Glu Pro Gly Ile Leu Leu His Gly Leu Lys Pro Trp Thr Gln
565 570 575

Tyr Ala Val Tyr Val Lys Ala Val Thr Leu Thr Met Val Glu Asn Asp
580 585 590

His Ile Arg Gly Ala Lys Ser Glu Ile Leu Tyr Ile Arg Thr Asn Ala
595 600 605

Ser Val Pro Ser Ile Pro Leu Asp Val Leu Ser Ala Ser Asn Ser Ser
610 615 620

Ser Gln Leu Ile Val Lys Trp Asn Pro Pro Ser Leu Pro Asn Gly Asn
625 630 635 640

Leu Ser Tyr Tyr Ile Val Arg Trp Gln Arg Gln Pro Gln Asp Gly Tyr
645 650 655

Leu Tyr Arg His Asn Tyr Cys Ser Lys Asp Lys Ile Pro Ile Arg Lys
660 665 670

Tyr Ala Asp Gly Thr Ile Asp Ile Glu Glu Val Thr Glu Asn Pro Lys
675 680 685

Thr Glu Val Cys Gly Gly Glu Lys Gly Pro Cys Cys Ala Cys Pro Lys
690 695 700

Thr Glu Ala Glu Lys Gln Ala Glu Lys Glu Glu Ala Glu Tyr Arg Lys
705 710 715 720

Val Phe Glu Asn Phe Leu His Asn Ser Ile Phe Val Pro Arg Pro Glu
725 730 735

Arg Lys Arg Arg Asp Val Met Gln Val Ala Asn Thr Thr Met Ser Ser
740 745 750

Arg Ser Arg Asn Thr Thr Ala Ala Asp Thr Tyr Asn Ile Thr Asp Pro
755 760 765

Glu Glu Leu Glu Thr Glu Tyr Pro Phe Phe Glu Ser Arg Val Asp Asn
770 775 780

Lys Glu Arg Thr Val Ile Ser Asn Leu Arg Pro Phe Thr Leu Tyr Arg
785 790 795 800

Ile Asp Ile His Ser Cys Asn His Glu Ala Glu Lys Leu Gly Cys Ser
805 810 815

Ala Ser Asn Phe Val Phe Ala Arg Thr Met Pro Ala Glu Gly Ala Asp
820 825 830

Asp Ile Pro Gly Pro Val Thr Trp Glu Pro Arg Pro Glu Asn Ser Ile
835 840 845

Phe Leu Lys Trp Pro Glu Pro Glu Asn Pro Asn Gly Leu Ile Leu Met
850 855 860

Tyr Glu Ile Lys Tyr Gly Ser Gln Val Glu Asp Gln Arg Glu Cys Val
865 870 875 880

Ser Arg Gln Glu Tyr Arg Lys Tyr Gly Gly Ala Lys Leu Asn Arg Leu
885 890 895

Asn Pro Gly Asn Tyr Thr Ala Arg Ile Gln Ala Thr Ser Leu Ser Gly
900 905 910

Asn Gly Ser Trp Thr Asp Pro Val Phe Phe Tyr Val Gln Ala Lys Thr
915 920 925

Gly Tyr Glu Asn Phe Ile His Leu Ile Ile Ala Leu Pro Val Ala Val
930 935 940

Leu Leu Ile Val Gly Gly Leu Val Ile Met Leu Tyr Val Phe His Arg
945 950 955 960

Lys Arg Asn Asn Ser Arg Leu Gly Asn Gly Val Leu Tyr Ala Ser Val
965 970 975

Asn Pro Glu Tyr Phe Ser Ala Ala Asp Val Tyr Val Pro Asp Glu Trp
980 985 990

Glu Val Ala Arg Glu Lys Ile Thr Met Ser Arg Glu Leu Gly Gln Gly
995 1000 1005

Ser Phe Gly Met Val Tyr Glu Gly Val Ala Lys Gly Val Val Lys
1010 1015 1020

Asp Glu Pro Glu Thr Arg Val Ala Ile Lys Thr Val Asn Glu Ala
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Ala Ser Met Arg Glu Arg Ile Glu Phe Leu Asn Glu Ala Ser Val
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Met Lys Glu Phe Asn Cys His His Val Val Arg Leu Leu Gly Val
1055 1060 1065

Val Ser Gln Gly Gln Pro Thr Leu Val Ile Met Glu Leu Met Thr
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Arg Gly Asp Leu Lys Ser Tyr Leu Arg Ser Leu Arg Pro Glu Met
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Glu Asn Asn Pro Val Leu Ala Pro Pro Ser Leu Ser Lys Met Ile
1100 1105 1110

Gln Met Ala Gly Glu Ile Ala Asp Gly Met Ala Tyr Leu Asn Ala
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Asn Lys Phe Val His Arg Asp Leu Ala Ala Arg Asn Cys Met Val
1130 1135 1140

Ala Glu Asp Phe Thr Val Lys Ile Gly Asp Phe Gly Met Thr Arg
1145 1150 1155

Asp Ile Tyr Glu Thr Asp Tyr Tyr Arg Lys Gly Gly Lys Gly Leu
1160 1165 1170

Leu Pro Val Arg Trp Met Ser Pro Glu Ser Leu Lys Asp Gly Val
1175 1180 1185

Phe Thr Thr Tyr Ser Asp Val Trp Ser Phe Gly Val Val Leu Trp
1190 1195 1200

Glu Ile Ala Thr Leu Ala Glu Gln Pro Tyr Gln Gly Leu Ser Asn
1205 1210 1215

Glu Gln Val Leu Arg Phe Val Met Glu Gly Gly Leu Leu Asp Lys
1220 1225 1230

Pro Asp Asn Cys Pro Asp Met Leu Phe Glu Leu Met Arg Met Cys
1235 1240 1245

Trp Gln Tyr Asn Pro Lys Met Arg Pro Ser Phe Leu Glu Ile Ile
1250 1255 1260

Ser Ser Ile Lys Glu Glu Met Glu Pro Gly Phe Arg Glu Val Ser
1265 1270 1275

Phe Tyr Tyr Ser Glu Glu Asn Lys Leu Pro Glu Pro Glu Glu Leu
1280 1285 1290

Asp Leu Glu Pro Glu Asn Met Glu Ser Val Pro Leu Asp Pro Ser
1295 1300 1305

Ala Ser Ser Ser Ser Leu Pro Leu Pro Asp Arg His Ser Gly His
1310 1315 1320

Lys Ala Glu Asn Gly Pro Gly Pro Gly Val Leu Val Leu Arg Ala
1325 1330 1335

Ser Phe Asp Glu Arg Gln Pro Tyr Ala His Met Asn Gly Gly Arg
1340 1345 1350

Lys Asn Glu Arg Ala Leu Pro Leu Pro Gln Ser Ser Thr Cys
1355 1360 1365

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gcc ttg ctg ctc tac ctc cac cat gcc aag tgg tcc cag gct gca ccc 100
 Ala Leu Leu Leu Tyr Leu His His Ala Lys Trp Ser Gln Ala Ala Pro
 15 20 25

atg gca gaa gga ggg ggg cag aat cat cac gaa gtg gtg aag ttc atg 148
 Met Ala Glu Gly Gly Gly Gln Asn His His Glu Val Val Lys Phe Met
 30 35 40

gat gtc tat cag cgc agc tac tgc cat cca atc gag acc ctg gtg gac 196
 Asp Val Tyr Gln Arg Ser Tyr Cys His Pro Ile Glu Thr Leu Val Asp
 45 50 55 60

atc ttc cag gag tac cct gat gag atc gag-tac atc ttc aag cca tcc 244
 Ile Phe Gln Glu Tyr Pro Asp Glu Ile Glu Tyr Ile Phe Lys Pro Ser
 65 70 75

tgt gtg ccc ctg atg cga tgc ggg ggc tgc tgc aat gac gag ggc ctg 292
 Cys Val Pro Leu Met Arg Cys Gly Gly Cys Cys Asn Asp Glu Gly Leu
 80 85 90

gag tgt gtg ccc act gag gag tcc aac atc acc atg cag att atg cgg 340
 Glu Cys Val Pro Thr Glu Glu Ser Asn Ile Thr Met Gln Ile Met Arg
 95 100 105

atc aaa cct cac caa ggc cag cac ata gga gag atg agc ttc cta cag 388
 Ile Lys Pro His Gln Gly Gln His Ile Gly Glu Met Ser Phe Leu Gln
 110 115 120

cac aac aaa tgt gaa tgc aga cca aag aaa gat aga gca aga caa gaa 436
 His Asn Lys Cys Glu Cys Arg Pro Lys Lys Asp Arg Ala Arg Gln Glu
 125 130 135 140

aat ccc tgt ggg cct tgc tca gag cgg aga aag cat ttg ttt gta caa 484
 Asn Pro Cys Gly Pro Cys Ser Glu Arg Arg Lys His Leu Phe Val Gln
 145 150 155

gat ccg cag acg tgt aaa tgt tcc tgc aaa aac aca gac tgc cgt tgc 532
 Asp Pro Gln Thr Cys Lys Cys Ser Cys Lys Asn Thr Asp Ser Arg Cys
 160 165 170

aag gcg agg cag ctt gag tta aac gaa cgt act tgc aga tgt gac aag 580
Lys Ala Arg Gln Leu Glu Leu Asn Glu Arg Thr Cys Arg Cys Asp Lys
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Gly Gly Gln Asn His His Glu Val Val Lys Phe Met Asp Val Tyr Gln
35 40 45

Arg Ser Tyr Cys His Pro Ile Glu Thr Leu Val Asp Ile Phe Gln Glu
50 55 60

Tyr Pro Asp Glu Ile Glu Tyr Ile Phe Lys Pro Ser Cys Val Pro Leu
65 70 75 80

Met Arg Cys Gly Gly Cys Cys Asn Asp Glu Gly Leu Glu Cys Val Pro
85 90 95

Thr Glu Glu Ser Asn Ile Thr Met Gln Ile Met Arg Ile Lys Pro His
100 105 110

Gln Gly Gln His Ile Gly Glu Met Ser Phe Leu Gln His Asn Lys Cys
115 120 125

Glu Cys Arg Pro Lys Lys Asp Arg Ala Arg Gln Glu Asn Pro Cys Gly
130 135 140

Pro Cys Ser Glu Arg Arg Lys His Leu Phe Val Gln Asp Pro Gln Thr
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Cys Lys Cys Ser Cys Lys Asn Thr Asp Ser Arg Cys Lys Ala Arg Gln
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 tgcaaaagtct cagac atg gct tgc ccc tgg aag ttt ctc ttc aaa gtc aaa 291
 Met Ala Cys Pro Trp Lys Phe Leu Phe Lys Val Lys
 1 5 10
 tcc tac caa agt gac ctg aaa gag gaa aag gac att aac aac aac gtg 339
 Ser Tyr Gln Ser Asp Leu Lys Glu Glu Lys Asp Ile Asn Asn Asn Val
 15 20 25
 aag aaa acc cct tgt gct gtt ctc agc cca aca ata caa gat gac cct 387
 Lys Lys Thr Pro Cys Ala Val Leu Ser Pro Thr Ile Gln Asp Asp Pro
 30 35 40
 aag agt cac caa aat ggc tcc ccg cag ctc ctc act ggg aca gca cag 435
 Lys Ser His Gln Asn Gly Ser Pro Gln Leu Leu Thr Gly Thr Ala Gln
 45 50 55 60
 aat gtt cca gaa tcc ctg gac aag ctg cat gtg aca tcg acc cgt cca 483
 Asn Val Pro Glu Ser Leu Asp Lys Leu His Val Thr Ser Thr Arg Pro
 65 70 75
 cag tat gtg agg atc aaa aac tgg ggc agt gga gag att ttg cat gac 531
 Gln Tyr Val Arg Ile Lys Asn Trp Gly Ser Gly Glu Ile Leu His Asp
 80 85 90

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| act | ctt | cac | cac | aag | gcc | aca | tcg | gat | ttc | act | tgc | aag | tcc | aag | tct | 579 |
| Thr | Leu | His | His | Lys | Ala | Thr | Ser | Asp | Phe | Thr | Cys | Lys | Ser | Lys | Ser | |
| | 95 | | | | | | 100 | | | | | 105 | | | | |
| tgc | ttg | ggg | tcc | atc | atg | aac | ccc | aag | agt | ttg | acc | aga | gga | ccc | aga | 627 |
| Cys | Leu | Gly | Ser | Ile | Met | Asn | Pro | Lys | Ser | Leu | Thr | Arg | Gly | Pro | Arg | |
| | 110 | | | | | 115 | | | | | 120 | | | | | |
| gac | aag | cct | acc | cct | ctg | gag | gag | ctc | ctg | cct | cat | gcc | att | gag | ttc | 675 |
| Asp | Lys | Pro | Thr | Pro | Leu | Glu | Glu | Leu | Leu | Pro | His | Ala | Ile | Glu | Phe | |
| 125 | | | | | 130 | | | | | 135 | | | | | 140 | |
| atc | aac | cag | tat | tat | ggc | tcc | ttt | aaa | gag | gca | aaa | ata | gag | gaa | cat | 723 |
| Ile | Asn | Gln | Tyr | Tyr | Gly | Ser | Phe | Lys | Glu | Ala | Lys | Ile | Glu | Glu | His | |
| | | | | 145 | | | | | 150 | | | | | 155 | | |
| ctg | gcc | agg | ctg | gaa | gct | gta | aca | aag | gaa | ata | gaa | aca | aca | gga | acc | 771 |
| Leu | Ala | Arg | Leu | Glu | Ala | Val | Thr | Lys | Glu | Ile | Glu | Thr | Thr | Gly | Thr | |
| | | | 160 | | | | | 165 | | | | | 170 | | | |
| tac | cag | ctc | act | ctg | gat | gag | ctc | atc | ttt | gcc | acc | aag | atg | gcc | tgg | 819 |
| Tyr | Gln | Leu | Thr | Leu | Asp | Glu | Leu | Ile | Phe | Ala | Thr | Lys | Met | Ala | Trp | |
| | | 175 | | | | | 180 | | | | | 185 | | | | |
| agg | aat | gcc | cct | cgc | tgc | atc | ggc | agg | atc | cag | tgg | tcc | aac | ctg | cag | 867 |
| Arg | Asn | Ala | Pro | Arg | Cys | Ile | Gly | Arg | Ile | Gln | Trp | Ser | Asn | Leu | Gln | |
| | 190 | | | | | 195 | | | | | 200 | | | | | |
| gtc | ttt | gac | gct | cgg | aac | tgt | agc | aca | gca | cag | gaa | atg | ttt | cag | cac | 915 |
| Val | Phe | Asp | Ala | Arg | Asn | Cys | Ser | Thr | Ala | Gln | Glu | Met | Phe | Gln | His | |
| 205 | | | | | 210 | | | | | 215 | | | | | 220 | |
| atc | tgc | aga | cac | ata | ctt | tat | gcc | acc | aac | aat | ggc | aac | atc | agg | tcg | 963 |
| Ile | Cys | Arg | His | Ile | Leu | Tyr | Ala | Thr | Asn | Asn | Gly | Asn | Ile | Arg | Ser | |
| | | | | 225 | | | | | 230 | | | | | 235 | | |
| gcc | atc | act | gtg | ttc | ccc | cag | cgg | agt | gac | ggc | aaa | cat | gac | ttc | agg | 1011 |
| Ala | Ile | Thr | Val | Phe | Pro | Gln | Arg | Ser | Asp | Gly | Lys | His | Asp | Phe | Arg | |
| | | | 240 | | | | | 245 | | | | | 250 | | | |
| ctc | tgg | aat | tca | cag | ctc | atc | cgg | tac | gct | ggc | tac | cag | atg | ccc | gat | 1059 |
| Leu | Trp | Asn | Ser | Gln | Leu | Ile | Arg | Tyr | Ala | Gly | Tyr | Gln | Met | Pro | Asp | |
| | | 255 | | | | | 260 | | | | | 265 | | | | |
| ggc | acc | atc | aga | ggg | gat | gct | gcc | acc | ttg | gag | ttc | acc | cag | ttg | tgc | 1107 |
| Gly | Thr | Ile | Arg | Gly | Asp | Ala | Ala | Thr | Leu | Glu | Phe | Thr | Gln | Leu | Cys | |
| | 270 | | | | | 275 | | | | | 280 | | | | | |
| atc | gac | cta | ggc | tgg | aag | ccc | cgc | tat | ggc | cgc | ttt | gat | gtg | ctg | cct | 1155 |
| Ile | Asp | Leu | Gly | Trp | Lys | Pro | Arg | Tyr | Gly | Arg | Phe | Asp | Val | Leu | Pro | |
| 285 | | | | | 290 | | | | | 295 | | | | | 300 | |
| | | | | | | | | | | | | | | | | |

| | |
|---|------|
| cct gat ctt gtg ttg gag gtg acc atg gag cat ccc aag tac gag tgg | 1251 |
| Pro Asp Leu Val Leu Glu Val Thr Met Glu His Pro Lys Tyr Glu Trp | |
| 320 325 330 | |
| ttc cag gag ctc ggg ttg aag tgg tat gca ctg cct gcc gtg gcc aac | 1299 |
| Phe Gln Glu Leu Gly Leu Lys Trp Tyr Ala Leu Pro Ala Val Ala Asn | |
| 335 340 345 | |
| atg cta ctg gag gtg ggt ggc ctc gaa ttc cca gcc tgc ccc ttc aat | 1347 |
| Met Leu Leu Glu Val Gly Gly Leu Glu Phe Pro Ala Cys Pro Phe Asn | |
| 350 355 360 | |
| ggt tgg tac atg ggc acc gag att gga gtt cga gac ttc tgt gac aca | 1395 |
| Gly Trp Tyr Met Gly Thr Glu Ile Gly Val Arg Asp Phe Cys Asp Thr | |
| 365 370 375 380 | |
| cag cgc tac aac atc ctg gag gaa gtg ggc cga agg atg ggc ctg gag | 1443 |
| Gln Arg Tyr Asn Ile Leu Glu Glu Val Gly Arg Arg Met Gly Leu Glu | |
| 385 390 395 | |
| acc cac aca ctg gcc tcc ctc tgg aaa gac cgg gct gtc acg gag atc | 1491 |
| Thr His Thr Leu Ala Ser Leu Trp Lys Asp Arg Ala Val Thr Glu Ile | |
| 400 405 410 | |
| aat gtg gct gtg ctc cat agt ttc cag aag cag aat gtg acc atc atg | 1539 |
| Asn Val Ala Val Leu His Ser Phe Gln Lys Gln Asn Val Thr Ile Met | |
| 415 420 425 | |
| gac cac cac aca gcc tca gag tcc ttc atg aag cac atg cag aat gag | 1587 |
| Asp His His Thr Ala Ser Glu Ser Phe Met Lys His Met Gln Asn Glu | |
| 430 435 440 | |
| tac cgg gcc cgt gga ggc tgc ccg gca gac tgg att tgg ctg gtc cct | 1635 |
| Tyr Arg Ala Arg Gly Gly Cys Pro Ala Asp Trp Ile Trp Leu Val Pro | |
| 445 450 455 460 | |
| cca gtg tct ggg agc atc acc cct gtg ttc cac cag gag atg ttg aac | 1683 |
| Pro Val Ser Gly Ser Ile Thr Pro Val Phe His Gln Glu Met Leu Asn | |
| 465 470 475 | |
| tat gtc cta tct cca ttc tac tac tac cag atc gag ccc tgg aag acc | 1731 |
| Tyr Val Leu Ser Pro Phe Tyr Tyr Tyr Gln Ile Glu Pro Trp Lys Thr | |
| 480 485 490 | |
| cac atc tgg cag aat gag aag ctg agg ccc agg agg aga gag atc cga | 1779 |
| His Ile Trp Gln Asn Glu Lys Leu Arg Pro Arg Arg Arg Glu Ile Arg | |
| 495 500 505 | |
| ttt aga gtc ttg gtg aaa gtg gtg ttc ttt gct tcc atg cta atg cga | 1827 |
| Phe Arg Val Leu Val Lys Val Val Phe Phe Ala Ser Met Leu Met Arg | |
| 510 515 520 | |
| aag gtc atg gct tca cgg gtc aga gcc acà gtc ctc ttt gct act gag | 1875 |
| Lys Val Met Ala Ser Arg Val Arg Ala Thr Val Leu Phe Ala Thr Glu | |
| 525 530 535 540 | |

| | |
|---|------|
| aca ggg aag tct gaa gca cta gcc agg gac ctg gcc acc ttg ttc agc | 1923 |
| Thr Gly Lys Ser Glu Ala Leu Ala Arg Asp Leu Ala Thr Leu Phe Ser | |
| 545 550 555 | |
| tac gcc ttc aac acc aag gtt gtc tgc atg gac cag tat aag gca agc | 1971 |
| Tyr Ala Phe Asn Thr Lys Val Val Cys Met Asp Gln Tyr Lys Ala Ser | |
| 560 565 570 | |
| acc ttg gaa gag gag caa cta ctg ctg gtg gtg aca agc aca ttt ggg | 2019 |
| Thr Leu Glu Glu Glu Gln Leu Leu Leu Val Val Thr Ser Thr Phe Gly | |
| 575 580 585 | |
| aat gga gac tgt ccc agc aat ggg cag act ctg aag aaa tct ctg ttc | 2067 |
| Asn Gly Asp Cys Pro Ser Asn Gly Gln Thr Leu Lys Lys Ser Leu Phe | |
| 590 595 600 | |
| atg ctt aga gaa ctc aac cac acc ttc agg tat gct gtg ttt ggc ctt | 2115 |
| Met Leu Arg Glu Leu Asn His Thr Phe Arg Tyr Ala Val Phe Gly Leu | |
| 605 610 615 620 | |
| ggc tcc agc atg tac cct cag ttc tgc gcc ttt gct cat gac atc gac | 2163 |
| Gly Ser Ser Met Tyr Pro Gln Phe Cys Ala Phe Ala His Asp Ile Asp | |
| 625 630 635 | |
| cag aag ctg tcc cac ctg gga gcc tct cag ctt gcc cca aca gga gaa | 2211 |
| Gln Lys Leu Ser His Leu Gly Ala Ser Gln Leu Ala Pro Thr Gly Glu | |
| 640 645 650 | |
| ggg gac gaa ctc agt ggg cag gag gat gcc ttc cgc agc tgg gct gta | 2259 |
| Gly Asp Glu Leu Ser Gly Gln Glu Asp Ala Phe Arg Ser Trp Ala Val | |
| 655 660 665 | |
| caa acc ttc cgg gca gcc tgt gag acc ttt gat gtc cga agc aaa cat | 2307 |
| Gln Thr Phe Arg Ala Ala Cys Glu Thr Phe Asp Val Arg Ser Lys His | |
| 670 675 680 | |
| cac att cag atc ccg aaa cgc ttc act tcc aat gca aca tgg gag cca | 2355 |
| His Ile Gln Ile Pro Lys Arg Phe Thr Ser Asn Ala Thr Trp Glu Pro | |
| 685 690 695 700 | |
| cag caa tat agg ctc atc cag agc ccg gag cct tta gac ctc aac aga | 2403 |
| Gln Gln Tyr Arg Leu Ile Gln Ser Pro Glu Pro Leu Asp Leu Asn Arg | |
| 705 710 715 | |
| gcc ctc agc agc atc cat gca aag aac gtg ttt acc atg agg ctg aaa | 2451 |
| Ala Leu Ser Ser Ile His Ala Lys Asn Val Phe Thr Met Arg Leu Lys | |
| 720 725 730 | |
| tcc cag cag aat ctg cag agt gaa aag tcc agc cgc acc acc ctc ctc | 2499 |
| Ser Gln Gln Asn Leu Gln Ser Glu Lys Ser Ser Arg Thr Thr Leu Leu | |
| 735 740 745 | |
| gtt cag ctc acc ttc gag ggc agc cga ggg ccc agc tac ctg cct ggg | 2547 |
| Val Gln Leu Thr Phe Glu Gly Ser Arg Gly Pro Ser Tyr Leu Pro Gly | |
| 750 755 760 | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| gaa | cac | ctg | ggg | atc | ttc | cca | ggc | aac | cag | acc | gcc | ctg | gtg | cag | gga | 2595 |
| Glu | His | Leu | Gly | Ile | Phe | Pro | Gly | Asn | Gln | Thr | Ala | Leu | Val | Gln | Gly | |
| 765 | | | | | 770 | | | | | 775 | | | | | 780 | |
| atc | ttg | gag | cga | gtt | gtg | gat | tgt | cct | aca | cca | cac | caa | act | gtg | tgc | 2643 |
| Ile | Leu | Glu | Arg | Val | Val | Asp | Cys | Pro | Thr | Pro | His | Gln | Thr | Val | Cys | |
| | | | | 785 | | | | | 790 | | | | | 795 | | |
| ctg | gag | gtt | ctg | gat | gag | agc | ggc | agc | tac | tgg | gtc | aaa | gac | aag | agg | 2691 |
| Leu | Glu | Val | Leu | Asp | Glu | Ser | Gly | Ser | Tyr | Trp | Val | Lys | Asp | Lys | Arg | |
| | | | 800 | | | | | 805 | | | | | 810 | | | |
| ctg | ccc | ccc | tgc | tca | ctc | agc | caa | gcc | ctc | acc | tac | ttc | ctg | gac | att | 2739 |
| Leu | Pro | Pro | Cys | Ser | Leu | Ser | Gln | Ala | Leu | Thr | Tyr | Phe | Leu | Asp | Ile | |
| | | 815 | | | | | 820 | | | | | 825 | | | | |
| acg | acc | cct | ccc | acc | cag | ctg | cag | ctc | cac | aag | ctg | gct | cgc | ttt | gcc | 2787 |
| Thr | Thr | Pro | Pro | Thr | Gln | Leu | Gln | Leu | His | Lys | Leu | Ala | Arg | Phe | Ala | |
| | 830 | | | | | 835 | | | | | 840 | | | | | |
| acg | gac | gag | acg | gat | agg | cag | aga | ttg | gag | gcc | ttg | tgt | cag | ccc | tca | 2835 |
| Thr | Asp | Glu | Thr | Asp | Arg | Gln | Arg | Leu | Glu | Ala | Leu | Cys | Gln | Pro | Ser | |
| 845 | | | | | 850 | | | | | 855 | | | | | 860 | |
| gag | tac | aat | gac | tgg | aag | ttc | agc | aac | aac | ccc | acg | ttc | ctg | gag | gtg | 2883 |
| Glu | Tyr | Asn | Asp | Trp | Lys | Phe | Ser | Asn | Asn | Pro | Thr | Phe | Leu | Glu | Val | |
| | | | | 865 | | | | | 870 | | | | | 875 | | |
| ctt | gaa | gag | ttc | cct | tcc | ttg | cat | gtg | ccc | gct | gcc | ttc | ctg | ctg | tgc | 2931 |
| Leu | Glu | Glu | Phe | Pro | Ser | Leu | His | Val | Pro | Ala | Ala | Phe | Leu | Leu | Ser | |
| | | | 880 | | | | | 885 | | | | | 890 | | | |
| cag | ctc | cct | atc | ttg | aag | ccc | cgc | tac | tac | tcc | atc | agc | tcc | tcc | cag | 2979 |
| Gln | Leu | Pro | Ile | Leu | Lys | Pro | Arg | Tyr | Tyr | Ser | Ile | Ser | Ser | Ser | Gln | |
| | | 895 | | | | | 900 | | | | | 905 | | | | |
| gac | cac | acc | ccc | tcg | gag | gtt | cac | ctc | act | gtg | gcc | gtg | gtc | acc | tac | 3027 |
| Asp | His | Thr | Pro | Ser | Glu | Val | His | Leu | Thr | Val | Ala | Val | Val | Thr | Tyr | |
| | 910 | | | | | 915 | | | | | 920 | | | | | |
| cgc | acc | cga | gat | ggt | cag | ggt | ccc | ctg | cac | cat | ggt | gtc | tgc | agc | act | 3075 |
| Arg | Thr | Arg | Asp | Gly | Gln | Gly | Pro | Leu | His | His | Gly | Val | Cys | Ser | Thr | |
| 925 | | | | | 930 | | | | | 935 | | | | | 940 | |
| tgg | atc | agg | aac | ctg | aag | ccc | cag | gac | cca | gtg | ccc | tgc | ttt | gtg | cga | 3123 |
| Trp | Ile | Arg | Asn | Leu | Lys | Pro | Gln | Asp | Pro | Val | Pro | Cys | Phe | Val | Arg | |
| | | | | 945 | | | | | 950 | | | | | 955 | | |
| agt | gtc | agt | ggc | ttc | cag | ctc | cct | gag | gac | ccc | tcc | cag | cct | tgc | atc | 3171 |
| Ser | Val | Ser | Gly | Phe | Gln | Leu | Pro | Glu | Asp | Pro | Ser | Gln | Pro | Cys | Ile | |
| | | | 960 | | | | | 965 | | | | | 970 | | | |

Phe Pro Gln Arg Ser Asp Gly Lys His Asp Phe Arg Leu Trp Asn Ser
245 250 255

Gln Leu Ile Arg Tyr Ala Gly Tyr Gln Met Pro Asp Gly Thr Ile Arg
260 265 270

Gly Asp Ala Ala Thr Leu Glu Phe Thr Gln Leu Cys Ile Asp Leu Gly
275 280 285

Trp Lys Pro Arg Tyr Gly Arg Phe Asp Val Leu Pro Leu Val Leu Gln
290 295 300

Ala Asp Gly Gln Asp Pro Glu Val Phe Glu Ile Pro Pro Asp Leu Val
305 310 315 320

Leu Glu Val Thr Met Glu His Pro Lys Tyr Glu Trp Phe Gln Glu Leu
325 330 335

Gly Leu Lys Trp Tyr Ala Leu Pro Ala Val Ala Asn Met Leu Leu Glu
340 345 350

Val Gly Gly Leu Glu Phe Pro Ala Cys Pro Phe Asn Gly Trp Tyr Met
355 360 365

Gly Thr Glu Ile Gly Val Arg Asp Phe Cys Asp Thr Gln Arg Tyr Asn
370 375 380

Ile Leu Glu Glu Val Gly Arg Arg Met Gly Leu Glu Thr His Thr Leu
385 390 395 400

Ala Ser Leu Trp Lys Asp Arg Ala Val Thr Glu Ile Asn Val Ala Val
405 410 415

Leu His Ser Phe Gln Lys Gln Asn Val Thr Ile Met Asp His His Thr
420 425 430

Ala Ser Glu Ser Phe Met Lys His Met Gln Asn Glu Tyr Arg Ala Arg
435 440 445

Gly Gly Cys Pro Ala Asp Trp Ile Trp Leu Val Pro Pro Val Ser Gly
450 455 460

Ser Ile Thr Pro Val Phe His Gln Glu Met Leu Asn Tyr Val Leu Ser
465 470 475 480

Pro Phe Tyr Tyr Tyr Gln Ile Glu Pro Trp Lys Thr His Ile Trp Gln
485 490 495

Asn Glu Lys Leu Arg Pro Arg Arg Arg Glu Ile Arg Phe Arg Val Leu
500 505 510

Val Lys Val Val Phe Phe Ala Ser Met Leu Met Arg Lys Val Met Ala
515 520 525

Ser Arg Val Arg Ala Thr Val Leu Phe Ala Thr Glu Thr Gly Lys Ser
530 535 540

Glu Ala Leu Ala Arg Asp Leu Ala Thr Leu Phe Ser Tyr Ala Phe Asn
545 550 555 560

Thr Lys Val Val Cys Met Asp Gln Tyr Lys Ala Ser Thr Leu Glu Glu
565 570 575

Glu Gln Leu Leu Leu Val Val Thr Ser Thr Phe Gly Asn Gly Asp Cys
580 585 590

Pro Ser Asn Gly Gln Thr Leu Lys Lys Ser Leu Phe Met Leu Arg Glu
595 600 605

Leu Asn His Thr Phe Arg Tyr Ala Val Phe Gly Leu Gly Ser Ser Met
610 615 620

Tyr Pro Gln Phe Cys Ala Phe Ala His Asp Ile Asp Gln Lys Leu Ser
625 630 635 640

His Leu Gly Ala Ser Gln Leu Ala Pro Thr Gly Glu Gly Asp Glu Leu
645 650 655

Ser Gly Gln Glu Asp Ala Phe Arg Ser Trp Ala Val Gln Thr Phe Arg
660 665 670

Ala Ala Cys Glu Thr Phe Asp Val Arg Ser Lys His His Ile Gln Ile
675 680 685

Pro Lys Arg Phe Thr Ser Asn Ala Thr Trp Glu Pro Gln Gln Tyr Arg
690 695 700

Leu Ile Gln Ser Pro Glu Pro Leu Asp Leu Asn Arg Ala Leu Ser Ser
705 710 715 720

Ile His Ala Lys Asn Val Phe Thr Met Arg Leu Lys Ser Gln Gln Asn
725 730 735

Leu Gln Ser Glu Lys Ser Ser Arg Thr Thr Leu Leu Val Gln Leu Thr
740 745 750

Phe Glu Gly Ser Arg Gly Pro Ser Tyr Leu Pro Gly Glu His Leu Gly
755 760 765

Ile Phe Pro Gly Asn Gln Thr Ala Leu Val Gln Gly Ile Leu Glu Arg
770 775 780

Val Val Asp Cys Pro Thr Pro His Gln Thr Val Cys Leu Glu Val Leu
785 790 795 800

Asp Glu Ser Gly Ser Tyr Trp Val Lys Asp Lys Arg Leu Pro Pro Cys
805 810 815

Ser Leu Ser Gln Ala Leu Thr Tyr Phe Leu Asp Ile Thr Thr Pro Pro
820 825 830

Thr Gln Leu Gln Leu His Lys Leu Ala Arg Phe Ala Thr Asp Glu Thr
835 840 845

Asp Arg Gln Arg Leu Glu Ala Leu Cys Gln Pro Ser Glu Tyr Asn Asp
850 855 860

Trp Lys Phe Ser Asn Asn Pro Thr Phe Leu Glu Val Leu Glu Glu Phe
865 870 875 880

Pro Ser Leu His Val Pro Ala Ala Phe Leu Leu Ser Gln Leu Pro Ile
885 890 895

Leu Lys Pro Arg Tyr Tyr Ser Ile Ser Ser Ser Gln Asp His Thr Pro
900 905 910

Ser Glu Val His Leu Thr Val Ala Val Val Thr Tyr Arg Thr Arg Asp
915 920 925

Gly Gln Gly Pro Leu His His Gly Val Cys Ser Thr Trp Ile Arg Asn
930 935 940

Leu Lys Pro Gln Asp Pro Val Pro Cys Phe Val Arg Ser Val Ser Gly
945 950 955 960

Phe Gln Leu Pro Glu Asp Pro Ser Gln Pro Cys Ile Leu Ile Gly Pro
965 970 975

Gly Thr Gly Ile Ala Pro Phe Arg Ser Phe Trp Gln Gln Arg Leu His
980 985 990

Asp Ser Gln His Lys Gly Leu Lys Gly Gly Arg Met Ser Leu Val Phe
995 1000 1005

Gly Cys Arg His Pro Glu Glu Asp His Leu Tyr Gln Glu Glu Met
1010 1015 1020

Gln Glu Met Val Arg Lys Arg Val Leu Phe Gln Val His Thr Gly
1025 1030 1035

Tyr Ser Arg Leu Pro Gly Lys Pro Lys Val Tyr Val Gln Asp Ile
1040 1045 1050

Leu Gln Lys Gln Leu Ala Asn Glu Val Leu Ser Val Leu His Gly
1055 1060 1065

Glu Gln Gly His Leu Tyr Ile Cys Gly Asp Val Arg Met Ala Arg
1070 1075 1080

Asp Val Ala Thr Thr Leu Lys Lys Leu Val Ala Thr Lys Leu Asn
1085 1090 1095

Leu Ser Glu Glu Gln Val Glu Asp Tyr Phe Phe Gln Leu Lys Ser
1100 1105 1110

Gln Lys Arg Tyr His Glu Asp Ile Phe Gly Ala Val Phe Ser Tyr
1115 1120 1125

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|--|------|
| tgctgtggca gctccttatt gttatacagag ggatccccgt gtcaggtggg agtactgcaa | 1200 |
| cctgacgcaa tgctcagacg cagaagggac tgccgtcgcg cctccgactg ttacccccgt | 1260 |
| tccaagccta gaggtcctt ccgaacaagg taaggagtct gtggccagac atctacacgc | 1320 |
| ttcgatgctg ggatgaaaag ccatggaaat tcccactgat gcagccgcct tcaatggtaa | 1380 |
| acggatgctc gagtgttgcc tgagttctac catgtaggag gaagcctccg tgcactctct | 1440 |
| gggggagcca gcggagtgat ttctggtgca acgtggttgg gctttgtctt taggatgggc | 1500 |
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| attccatgtg gccctgggtc tatggagcag tacatgagct ccagtgctc taaggctctt | 1800 |
| cagccctagg ctttgaaggg agtgatttct cagtattctt aaacctctt ctgatgacac | 1860 |
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| catccctgag aagcaaagtg tctttgtctt cagtcagata cataggaccg ttttctgccc | 2040 |
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| gccaaatgcg gtgccgtttg catgaagatt cagtagagtt tctagaaag gtgctacctc | 2220 |
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| agatactcag cttgatttcc cgtgttttca tttcagcacc gactgagcaa aggcctgggg | 2520 |
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| caggaagaac ctgccaaagt tggatcatcta tgacaccaca ctgcgatagt cggacccag | 2640 |
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| gcagatggcg tagcaaaatg tctcaggatg attgccttgg agctaagggt ctgagagaag | 2820 |

| | |
|--|------|
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| cttcacaaac accaactaaa cgtcaatgga gactttccag tctggaactt ccgttacttc | 3000 |
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| gaaagaatag gtgcttattt atggacaggt gaattgatct gtttctatat ctacgtatat | 3120 |
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| cagcaagaga agatccaagg aaggaaggca gatgagagtc agcacagaga gggatgctga | 3240 |
| aaagtaaaag ggatgggtgg atggagagaa gcccggtct gaccaccaa tggccaatat | 3300 |
| tttggccaca agcgactacc agagacatgg aaaaatggtt tctacatgtg ggacaacaga | 3360 |
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| ctgtagccat cttgctgaat ggaggagagg gattggagtt tgggatgact gtggtagctg | 3540 |
| aaatttttct aggtctgcta gaaataagaa ctggtttgtg gaggaaaaga gctctacaaa | 3600 |
| tacgcataga agtctctcc agtcgttggc ctgacatgac gctgcctgtg cacaggaaat | 3660 |
| ggttccacga gaaagtgtgg caaagaacat ttactgagaa acagcaagta caagagcaca | 3720 |
| ggaagctcaa taaagaagag agagatcaca tagcactctg ggatactgga gttcttccca | 3780 |
| gctagaccag agagtctca cggagcacat tgccaattca gtggagaccc cagaacagcc | 3840 |
| gtaatttaaa ggtacactta gtatattact agaataaagt cagctgcaga caacccttg | 3900 |
| cacagctgga aagcaagtgt ccaagcatca aatcggttcc caatcaatga agtgcctgtg | 3960 |
| agaggaaatc tcaactctct ttagaagtaa acaacaaagt cgattgcctc agctatgcgg | 4020 |
| tatccgcaga gtgagtccta aatttaaaat ctgactacat gtagaaaagc gtttcgtgtg | 4080 |
| acccatgacc aggaaataaa tcgggtaata caaacaggct caggaatgag agaaatgatt | 4140 |
| agaattgcgt gaaaatttga aatatcagta tgataactga tttcaaataat ttaaaaaaac | 4200 |
| aacatgcaag aaagcagata tcatatcaag agaaattaac agtacagaat agccaaatta | 4260 |
| aattaaagag ctagtataaa aaaagtatgt cttaattgaa aaaaattact gtatggccgg | 4320 |
| ctgatcaatt tagacgttcc agaggaaaac attaccaac acacaattct agagaacct | 4380 |
| cagaatgagc tacacacaca cacacacaca cacacacaaa ctgaaaacac acccatactc | 4440 |
| acacacacgc agaaactcac aagttctaac acacacagac acgcgcaccc ctgaagaaac | 4500 |

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|-------------|------------|-------------|-------------|-------------|-------------|------|
| agtgaatat | aaaattaagc | gagcctcaca | gacatgtagg | aaaatatgaa | aagatttcct | 4560 |
| gcatgtggga | agcaagtcac | agtaaagagc | aagggagttt | ggaatagaaa | caaataccag | 4620 |
| aatcaaggat | ggctgataac | ttttcaatta | cgaagaacat | taaaaaaaaat | cacagaatcg | 4680 |
| tgaaactcaa | gggatcacat | agggaaatttc | ggaaaaaaaa | cccaacctgt | atgatgtact | 4740 |
| tttgtacatc | acagttcgaa | ggtaacaagg | caaagatata | ataagaagaa | acctgtcacg | 4800 |
| agaaactgga | ggaaaaagag | ctgtgtcttc | ctacaagtac | actgatacaa | attgccaatg | 4860 |
| tgttcacctc | agaaacactg | gaagccagat | accagggaat | attgttaaaa | tgataatcag | 4920 |
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| catgtcggat | aaatgcatat | tgtgcaactg | cccaaagaaa | gaaaccggaa | actgtaagaa | 5040 |
| ttggaaatca | gcaggcttat | gtaacaagag | aggtgacccg | aaggaattag | gtagaagaag | 5100 |
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| gtagatagat | gtaaatgcaa | aatattttct | tgatcaaatt | tctatatctt | tgtaaattgag | 5220 |
| agttgactac | ttgaaacaaa | atgatagcaa | gatatttaac | ttcagcatat | gtagaggtaa | 5280 |
| gaatttgaaa | tggtagcata | aatcacgaag | ggattaattc | gaagtgtacc | gttgtaagtt | 5340 |
| tctttacctc | atgcacgatg | gtgtgtcata | ttaataaaaag | ggtagtgtgc | gggttcgaag | 5400 |
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| taatacatth | cccattttct | caggcagcca | gaggtcatga | atgtgaggat | actgggaggt | 5700 |
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| aactactcgc | ctgctttgcc | ccctaattgca | tttttctctg | ctgctccgta | gctgtccgac | 5820 |
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| ttcaactcat | ccccctttcc | ctcagtcccg | gagtagctgc | ggccagcaga | gggtagactg | 5940 |
| agagcaggag | agaaggacct | gcctaggaac | cccttctaga | gatactgcat | cctgcctggg | 6000 |
| agcaagtttt | ccagggcagc | tttgagaagt | cttggagaaa | caaacctact | aaacctgaca | 6060 |
| gacagtaata | ctatttgcac | aatgcttttc | tgtgggaaag | gtagagcctt | ttcactacgt | 6120 |
| attgagtaca | tagagtgtga | gggttgacct | ggaacggcta | tcctcctgga | tgacgtgtgt | 6180 |

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|--|------|
| tttctgaaga actacatggt cgttgcaact cccacattag aatatgaagt cctaccgaga | 6240 |
| gagatacggga gactagacag atacagatgc atttgcatgt gaatacacia tcccacaata | 6300 |
| cagacgtcaa aaccataacc agttattcca gagagatgga ttgggcagaa ggcagaagga | 6360 |
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| tgcagagagg attagtgatc gagagccatt tttgctggtg gcaatcatat ggtactttta | 6540 |
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| ttgatc atg aac tac tgc agg aat cca gat gct gtg gca gct cct tat | 6708 |
| Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr | |
| 1 5 10 | |
| tgt tat acg agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg acg | 6756 |
| Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr | |
| 15 20 25 30 | |
| caa tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg act gtt acc | 6804 |
| Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr | |
| 35 40 45 | |
| ccg gtt cca agc cta gag gct cct tcc gaa caa gca cca act gag caa | 6852 |
| Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln | |
| 50 55 60 | |
| agg cct ggg gtg cag gag tgc tac cac gga aat gga cag agt tat caa | 6900 |
| Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Gln | |
| 65 70 75 | |
| ggc aca tac ttc att act gtc aca gga aga acc tgc caa gct tgg tca | 6948 |
| Gly Thr Tyr Phe Ile Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser | |
| 80 85 90 | |
| tct atg aca cca cac tgc cat agt cgg acc cca gca tac tac cca aat | 6996 |
| Ser Met Thr Pro His Ser His Ser Arg Thr Pro Ala Tyr Tyr Pro Asn | |
| 95 100 105 110 | |
| gct ggc ttg atc aag aac tac tgc cga aat cca gat cct gtg gca gcc | 7044 |
| Ala Gly Leu Ile Lys Asn Tyr Cys Arg Asn Pro Asp Pro Val Ala Ala | |
| 115 120 125 | |
| cct tgg tgt tat aca aca gat ccc agt gtc agg tgg gag tac tgc aac | 7092 |
| Pro Trp Cys Tyr Thr Thr Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn | |
| 130 135 140 | |
| ctg aca cga tgc tca gat gca gaa tgg act gcc ttc gtc cct ccg aat | 7140 |
| Leu Thr Arg Cys Ser Asp Ala Glu Trp Thr Ala Phe Val Pro Pro Asn | |
| 145 150 155 | |

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|---|------|
| gtt att ctg gct cca agc cta gag gct ttt ttt gaa caa gca ctg act | 7188 |
| Val Ile Leu Ala Pro Ser Leu Glu Ala Phe Phe Glu Gln Ala Leu Thr | |
| 160 165 170 | |
| gag gaa acc ccc ggg gta cag gac tgc tac tac cat tat gga cag agt | 7236 |
| Glu Glu Thr Pro Gly Val Gln Asp Cys Tyr Tyr His Tyr Gly Gln Ser | |
| 175 180 185 190 | |
| tac cga ggc aca tac tcc acc act gtc aca gga aga act tgc caa gct | 7284 |
| Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala | |
| 195 200 205 | |
| tgg tca tct atg aca cca cac cag cat agt cgg acc cca gaa aac tac | 7332 |
| Trp Ser Ser Met Thr Pro His Gln His Ser Arg Thr Pro Glu Asn Tyr | |
| 210 215 220 | |
| cca aat gct ggc ctg acc agg aac tac tgc agg aat cca gat gct gag | 7380 |
| Pro Asn Ala Gly Leu Thr Arg Asn Tyr Cys Arg Asn Pro Asp Ala Glu | |
| 225 230 235 | |
| att cgc cct tgg tgt tac acc atg gat ccc agt gtc agg tgg gag tac | 7428 |
| Ile Arg Pro Trp Cys Tyr Thr Met Asp Pro Ser Val Arg Trp Glu Tyr | |
| 240 245 250 | |
| tgc aac ctg aca caa tgc ctg gtg aca gaa tca agt gtc ctt gca act | 7476 |
| Cys Asn Leu Thr Gln Cys Leu Val Thr Glu Ser Ser Val Leu Ala Thr | |
| 255 260 265 270 | |
| ctc acg gtg gtc cca gat cca agc aca gag gct tct tct gaa gaa gca | 7524 |
| Leu Thr Val Val Pro Asp Pro Ser Thr Glu Ala Ser Ser Glu Glu Ala | |
| 275 280 285 | |
| cca acg gag caa agc ccc ggg gtc cag gat tgc tac cat ggt gat gga | 7572 |
| Pro Thr Glu Gln Ser Pro Gly Val Gln Asp Cys Tyr His Gly Asp Gly | |
| 290 295 300 | |
| cag agt tat cga ggc tca ttc tct acc act gtc aca gga agg aca tgt | 7620 |
| Gln Ser Tyr Arg Gly Ser Phe Ser Thr Thr Val Thr Gly Arg Thr Cys | |
| 305 310 315 | |
| cag tct tgg tcc tct atg aca cca cac tgg cat cag agg aca aca gaa | 7668 |
| Gln Ser Trp Ser Ser Met Thr Pro His Trp His Gln Arg Thr Thr Glu | |
| 320 325 330 | |
| tat tat cca aat ggt ggc ctg acc agg aac tac tgc agg aat cca gat | 7716 |
| Tyr Tyr Pro Asn Gly Gly Leu Thr Arg Asn Tyr Cys Arg Asn Pro Asp | |
| 335 340 345 350 | |
| gct gag att agt cct tgg tgt tat acc atg gat ccc aat gtc aga tgg | 7764 |
| Ala Glu Ile Ser Pro Trp Cys Tyr Thr Met Asp Pro Asn Val Arg Trp | |
| 355 360 365 | |
| gag tac tgc aac ctg aca caa tgt cca gtg aca gaa tca agt gtc ctt | 7812 |
| Glu Tyr Cys Asn Leu Thr Gln Cys Pro Val Thr Glu Ser Ser Val Leu | |
| 370 375 380 | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| gcg | acg | tcc | acg | gct | gtt | tct | gaa | caa | gca | cca | acg | gag | caa | agc | ccc | 7860 |
| Ala | Thr | Ser | Thr | Ala | Val | Ser | Glu | Gln | Ala | Pro | Thr | Glu | Gln | Ser | Pro | |
| | | 385 | | | | | 390 | | | | | 395 | | | | |
| aca | gtc | cag | gac | tgc | tac | cat | ggt | gat | gga | cag | agt | tat | cga | ggc | tca | 7908 |
| Thr | Val | Gln | Asp | Cys | Tyr | His | Gly | Asp | Gly | Gln | Ser | Tyr | Arg | Gly | Ser | |
| | 400 | | | | | 405 | | | | | 410 | | | | | |
| ttc | tcc | acc | act | gtt | aca | gga | agg | aca | tgt | cag | tct | tgg | tcc | tct | atg | 7956 |
| Phe | Ser | Thr | Thr | Val | Thr | Gly | Arg | Thr | Cys | Gln | Ser | Trp | Ser | Ser | Met | |
| 415 | | | | | 420 | | | | | 425 | | | | | 430 | |
| aca | cca | cac | tgg | cat | cag | aga | acc | aca | gaa | tac | tac | cca | aat | ggt | ggc | 8004 |
| Thr | Pro | His | Trp | His | Gln | Arg | Thr | Thr | Glu | Tyr | Tyr | Pro | Asn | Gly | Gly | |
| | | | | 435 | | | | | 440 | | | | | 445 | | |
| ctg | acc | agg | aac | tac | tgc | agg | aat | cca | gat | gct | gag | att | cgc | cct | tgg | 8052 |
| Leu | Thr | Arg | Asn | Tyr | Cys | Arg | Asn | Pro | Asp | Ala | Glu | Ile | Arg | Pro | Trp | |
| | | | 450 | | | | | 455 | | | | | 460 | | | |
| tgt | tat | acc | atg | gat | ccc | agt | gtc | aga | tgg | gag | tac | tgc | aac | ctg | acg | 8100 |
| Cys | Tyr | Thr | Met | Asp | Pro | Ser | Val | Arg | Trp | Glu | Tyr | Cys | Asn | Leu | Thr | |
| | | 465 | | | | | 470 | | | | | 475 | | | | |
| caa | tgt | cca | gtg | atg | gaa | tca | act | ctc | ctc | aca | act | ccc | acg | gtg | gtc | 8148 |
| Gln | Cys | Pro | Val | Met | Glu | Ser | Thr | Leu | Leu | Thr | Thr | Pro | Thr | Val | Val | |
| | 480 | | | | | 485 | | | | | | 490 | | | | |
| cca | gtt | cca | agc | aca | gag | ctt | cct | tct | gaa | gaa | gca | cca | act | gaa | aac | 8196 |
| Pro | Val | Pro | Ser | Thr | Glu | Leu | Pro | Ser | Glu | Glu | Ala | Pro | Thr | Glu | Asn | |
| 495 | | | | | 500 | | | | | 505 | | | | | 510 | |
| agc | act | ggg | gtc | cag | gac | tgc | tac | cga | ggt | gat | gga | cag | agt | tat | cga | 8244 |
| Ser | Thr | Gly | Val | Gln | Asp | Cys | Tyr | Arg | Gly | Asp | Gly | Gln | Ser | Tyr | Arg | |
| | | | | 515 | | | | | 520 | | | | | 525 | | |
| ggc | aca | ctc | tcc | acc | act | atc | aca | gga | aga | aca | tgt | cag | tct | tgg | tcg | 8292 |
| Gly | Thr | Leu | Ser | Thr | Thr | Ile | Thr | Gly | Arg | Thr | Cys | Gln | Ser | Trp | Ser | |
| | | | 530 | | | | | 535 | | | | | 540 | | | |
| tct | atg | aca | cca | cat | tgg | cat | cgg | agg | atc | cca | tta | tac | tat | cca | aat | 8340 |
| Ser | Met | Thr | Pro | His | Trp | His | Arg | Arg | Ile | Pro | Leu | Tyr | Tyr | Pro | Asn | |
| | | | 545 | | | | 550 | | | | | 555 | | | | |
| gct | ggc | ctg | acc | agg | aac | tac | tgc | agg | aat | cca | gat | gct | gag | att | cgc | 8388 |
| Ala | Gly | Leu | Thr | Arg | Asn | Tyr | Cys | Arg | Asn | Pro | Asp | Ala | Glu | Ile | Arg | |
| | 560 | | | | | 565 | | | | | 570 | | | | | |
| cct | tgg | tgt | tac | acc | atg | gat | ccc | agt | gtc | agg | tgg | gag | tac | tgc | aac | 8436 |
| Pro | Trp | Cys | Tyr | Thr | Met | Asp | Pro | Ser | Val | Arg | Trp | Glu | Tyr | Cys | Asn | |
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| ctg | aca | cga | tgt | | | | | | | | | | | | | |

| | |
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| gtg gcc ccg gtt cca agc aca gag gct cct tct gaa caa gca cca cct Val Ala Pro Val Pro Ser Thr Glu Ala Pro Ser Glu Gln Ala Pro Pro 610 615 620 | 8532 |
| gag aaa agc cct gtg gtc cag gat tgc tac cat ggt gat gga cgg agt Glu Lys Ser Pro Val Val Gln Asp Cys Tyr His Gly Asp Gly Arg Ser 625 630 635 | 8580 |
| tat cga ggc ata tcc tcc acc act gtc aca gga agg acc tgt caa tct Tyr Arg Gly Ile Ser Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ser 640 645 650 | 8628 |
| tgg tca tct atg ata cca cac tgg cat cag agg acc cca gaa aac tac Trp Ser Ser Met Ile Pro His Trp His Gln Arg Thr Pro Glu Asn Tyr 655 660 665 670 | 8676 |
| cca aat gct ggc ctg acc gag aac tac tgc agg aat cca gat tct ggg Pro Asn Ala Gly Leu Thr Glu Asn Tyr Cys Arg Asn Pro Asp Ser Gly 675 680 685 | 8724 |
| aaa caa ccc tgg tgt tac aca acc gat ccg tgt gtg agg tgg gag tac Lys Gln Pro Trp Cys Tyr Thr Thr Asp Pro Cys Val Arg Trp Glu Tyr 690 695 700 | 8772 |
| tgc aat ctg aca caa tgc tca gaa aca gaa tca ggt gtc cta gag act Cys Asn Leu Thr Gln Cys Ser Glu Thr Glu Ser Gly Val Leu Glu Thr 705 710 715 | 8820 |
| ccc act gtt gtt cca gtt cca agc atg gag gct cat tct gaa gca gca Pro Thr Val Val Pro Val Pro Ser Met Glu Ala His Ser Glu Ala Ala 720 725 730 | 8868 |
| cca act gag caa acc cct gtg gtc cgg cag tgc tac cat ggt aat ggc Pro Thr Glu Gln Thr Pro Val Val Arg Gln Cys Tyr His Gly Asn Gly 735 740 745 750 | 8916 |
| cag agt tat cga ggc aca ttc tcc acc act gtc aca gga agg aca tgt Gln Ser Tyr Arg Gly Thr Phe Ser Thr Thr Val Thr Gly Arg Thr Cys 755 760 765 | 8964 |
| caa tct tgg tca tcc atg aca cca cac cgg cat cag agg acc cca gaa Gln Ser Trp Ser Ser Met Thr Pro His Arg His Gln Arg Thr Pro Glu 770 775 780 | 9012 |
| aac tac cca aat gat ggc ctg aca atg aac tac tgc agg aat cca gat Asn Tyr Pro Asn Asp Gly Leu Thr Met Asn Tyr Cys Arg Asn Pro Asp 785 790 795 | 9060 |
| gcc gat aca ggc cct tgg tgt ttt acc atg gac ccc agc atc agg tgg Ala Asp Thr Gly Pro Trp Cys Phe Thr Met Asp Pro Ser Ile Arg Trp 800 805 810 | 9108 |
| gag tac tgc aac ctg acg cga tgc tca gac aca gaa ggg act gtg gtc Glu Tyr Cys Asn Leu Thr Arg Cys Ser Asp Thr Glu Gly Thr Val Val 815 820 825 830 | 9156 |

| | |
|---|------|
| gct cct ccg act gtc atc cag gtt cca agc cta ggg cct cct tct gaa | 9204 |
| Ala Pro Pro Thr Val Ile Gln Val Pro Ser Leu Gly Pro Pro Ser Glu | |
| 835 840 845 | |
| caa gac tgt atg ttt ggg aat ggg aaa gga tac cgg ggc aag aag gca | 9252 |
| Gln Asp Cys Met Phe Gly Asn Gly Lys Gly Tyr Arg Gly Lys Lys Ala | |
| 850 855 860 | |
| acc act gtt act ggg acg cca tgc cag gaa tgg gct gcc cag gag ccc | 9300 |
| Thr Thr Val Thr Gly Thr Pro Cys Gln Glu Trp Ala Ala Gln Glu Pro | |
| 865 870 875 | |
| cat aga cac agc acg ttc att cca ggg aca aat aaa tgg gca ggt ctg | 9348 |
| His Arg His Ser Thr Phe Ile Pro Gly Thr Asn Lys Trp Ala Gly Leu | |
| 880 885 890 | |
| gaa aaa aat tac tgc cgt aac cct gat ggt gac atc aat ggt ccc tgg | 9396 |
| Glu Lys Asn Tyr Cys Arg Asn Pro Asp Gly Asp Ile Asn Gly Pro Trp | |
| 895 900 905 910 | |
| tgc tac aca atg aat cca aga aaa ctt ttt gac tac tgt gat atc cct | 9444 |
| Cys Tyr Thr Met Asn Pro Arg Lys Leu Phe Asp Tyr Cys Asp Ile Pro | |
| 915 920 925 | |
| ctc tgt gca tcc tct tca ttt gat tgt ggg aag cct caa gtg gag ccg | 9492 |
| Leu Cys Ala Ser Ser Ser Phe Asp Cys Gly Lys Pro Gln Val Glu Pro | |
| 930 935 940 | |
| aag aaa tgt cct gga agc att gta ggg ggg tgt gtg gcc cac cca cat | 9540 |
| Lys Lys Cys Pro Gly Ser Ile Val Gly Gly Cys Val Ala His Pro His | |
| 945 950 955 | |
| tcc tgg ccc tgg caa gtc agt ctc aga aca agg ttt gga aag cac ttc | 9588 |
| Ser Trp Pro Trp Gln Val Ser Leu Arg Thr Arg Phe Gly Lys His Phe | |
| 960 965 970 | |
| tgt gga ggc acc tta ata tcc cca gag tgg gtg ctg act gct gct cac | 9636 |
| Cys Gly Gly Thr Leu Ile Ser Pro Glu Trp Val Leu Thr Ala Ala His | |
| 975 980 985 990 | |
| tgc ttg aag aag tcc tca agg cct tca tcc tac aag gtc atc ctg ggt | 9684 |
| Cys Leu Lys Lys Ser Ser Arg Pro Ser Ser Tyr Lys Val Ile Leu Gly | |
| 995 1000 1005 | |
| gca cac caa gaa gtg aac ctc gaa tct cat gtt cag gaa ata gaa | 9729 |
| Ala His Gln Glu Val Asn Leu Glu Ser His Val Gln Glu Ile Glu | |
| 1010 1015 1020 | |
| gtg tct agg ctg ttc ttg gag ccc aca caa gca gat att gcc ttg | 9774 |
| Val Ser Arg Leu Phe Leu Glu Pro Thr Gln Ala Asp Ile Ala Leu | |
| 1025 1030 1035 | |
| cta aag cta agc agg cct gcc gtc atc act gac aaa gta atg cca | 9819 |
| Leu Lys Leu Ser Arg Pro Ala Val Ile Thr Asp Lys Val Met Pro | |
| 1040 1045 1050 | |

gct tgt ctg cca tcc cca gac tac atg gtc acc gcc agg act gaa 9864
 Ala Cys Leu Pro Ser Pro Asp Tyr Met Val Thr Ala Arg Thr Glu
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tgt tac atc act ggc tgg gga gaa acc caa ggt acc ttt ggg act 9909
 Cys Tyr Ile Thr Gly Trp Gly Glu Thr Gln Gly Thr Phe Gly Thr
 1070 1075 1080

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 Gly Leu Leu Lys Glu Ala Gln Leu Leu Val Ile Glu Asn Glu Val
 1085 1090 1095

tgc aat cac tat aag tat att tgt gct gag cat ttg gcc aga ggc 9999
 Cys Asn His Tyr Lys Tyr Ile Cys Ala Glu His Leu Ala Arg Gly
 1100 1105 1110

act gac agt tgc cag ggt gac agt gga ggg cct ctg gtt tgc ttc 10044
 Thr Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu Val Cys Phe
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gag aag gac aaa tac att tta caa gga gtc act tct tgg ggt ctt 10089
 Glu Lys Asp Lys Tyr Ile Leu Gln Gly Val Thr Ser Trp Gly Leu
 1130 1135 1140

ggc tgt gca cgc ccc aat aag cct ggt gtc tat gct cgt gtt tca 10134
 Gly Cys Ala Arg Pro Asn Lys Pro Gly Val Tyr Ala Arg Val Ser
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 Arg Phe Val Thr Trp Ile Glu Gly Met Met Arg Asn Asn
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tagcatgctg gaaataatag acagcaatca aacgaagaca ctgttcccag ctaccagcta 10296

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Leu Thr Gln Cys Leu Val Thr Glu Ser Ser Val Leu Ala Thr Leu Thr
260 265 270

Val Val Pro Asp Pro Ser Thr Glu Ala Ser Ser Glu Glu Ala Pro Thr
275 280 285

Glu Gln Ser Pro Gly Val Gln Asp Cys Tyr His Gly Asp Gly Gln Ser
290 295 300

Tyr Arg Gly Ser Phe Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ser
305 310 315 320

Trp Ser Ser Met Thr Pro His Trp His Gln Arg Thr Thr Glu Tyr Tyr
325 330 335

Pro Asn Gly Gly Leu Thr Arg Asn Tyr Cys Arg Asn Pro Asp Ala Glu
340 345 350

Ile Ser Pro Trp Cys Tyr Thr Met Asp Pro Asn Val Arg Trp Glu Tyr
355 360 365

Cys Asn Leu Thr Gln Cys Pro Val Thr Glu Ser Ser Val Leu Ala Thr
370 375 380

Ser Thr Ala Val Ser Glu Gln Ala Pro Thr Glu Gln Ser Pro Thr Val
385 390 395 400

Gln Asp Cys Tyr His Gly Asp Gly Gln Ser Tyr Arg Gly Ser Phe Ser
405 410 415

Thr Thr Val Thr Gly Arg Thr Cys Gln Ser Trp Ser Ser Met Thr Pro
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His Trp His Gln Arg Thr Thr Glu Tyr Tyr Pro Asn Gly Gly Leu Thr
435 440 445

Arg Asn Tyr Cys Arg Asn Pro Asp Ala Glu Ile Arg Pro Trp Cys Tyr
450 455 460

Thr Met Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys
465 470 475 480

Pro Val Met Glu Ser Thr Leu Leu Thr Thr Pro Thr Val Val Pro Val
485 490 495

Pro Ser Thr Glu Leu Pro Ser Glu Glu Ala Pro Thr Glu Asn Ser Thr
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Gly Val Gln Asp Cys Tyr Arg Gly Asp Gly Gln Ser Tyr Arg Gly Thr
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Leu Ser Thr Thr Ile Thr Gly Arg Thr Cys Gln Ser Trp Ser Ser Met
530 535 540

Thr Pro His Trp His Arg Arg Ile Pro Leu Tyr Tyr Pro Asn Ala Gly
545 550 555 560

Leu Thr Arg Asn Tyr Cys Arg Asn Pro Asp Ala Glu Ile Arg Pro Trp
565 570 575

Cys Tyr Thr Met Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn Leu Thr
580 585 590

Arg Cys Pro Val Thr Glu Ser Ser Val Leu Thr Thr Pro Thr Val Ala
595 600 605

Pro Val Pro Ser Thr Glu Ala Pro Ser Glu Gln Ala Pro Pro Glu Lys
610 615 620

Ser Pro Val Val Gln Asp Cys Tyr His Gly Asp Gly Arg Ser Tyr Arg
625 630 635 640

Gly Ile Ser Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ser Trp Ser
645 650 655

Ser Met Ile Pro His Trp His Gln Arg Thr Pro Glu Asn Tyr Pro Asn
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Ala Gly Leu Thr Glu Asn Tyr Cys Arg Asn Pro Asp Ser Gly Lys Gln
675 680 685

Pro Trp Cys Tyr Thr Thr Asp Pro Cys Val Arg Trp Glu Tyr Cys Asn
690 695 700

Leu Thr Gln Cys Ser Glu Thr Glu Ser Gly Val Leu Glu Thr Pro Thr
705 710 715 720

Val Val Pro Val Pro Ser Met Glu Ala His Ser Glu Ala Ala Pro Thr
725 730 735

Glu Gln Thr Pro Val Val Arg Gln Cys Tyr His Gly Asn Gly Gln Ser
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Tyr Arg Gly Thr Phe Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ser
755 760 765

Trp Ser Ser Met Thr Pro His Arg His Gln Arg Thr Pro Glu Asn Tyr
770 775 780

Pro Asn Asp Gly Leu Thr Met Asn Tyr Cys Arg Asn Pro Asp Ala Asp
785 790 795 800

Thr Gly Pro Trp Cys Phe Thr Met Asp Pro Ser Ile Arg Trp Glu Tyr
805 810 815

Cys Asn Leu Thr Arg Cys Ser Asp Thr Glu Gly Thr Val Val Ala Pro
820 825 830

Pro Thr Val Ile Gln Val Pro Ser Leu Gly Pro Pro Ser Glu Gln Asp
835 840 845

Cys Met Phe Gly Asn Gly Lys Gly Tyr Arg Gly Lys Lys Ala Thr Thr
850 855 860

Val Thr Gly Thr Pro Cys Gln Glu Trp Ala Ala Gln Glu Pro His Arg
865 870 875 880

His Ser Thr Phe Ile Pro Gly Thr Asn Lys Trp Ala Gly Leu Glu Lys
885 890 895

Asn Tyr Cys Arg Asn Pro Asp Gly Asp Ile Asn Gly Pro Trp Cys Tyr
900 905 910

Thr Met Asn Pro Arg Lys Leu Phe Asp Tyr Cys Asp Ile Pro Leu Cys
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Ala Ser Ser Ser Phe Asp Cys Gly Lys Pro Gln Val Glu Pro Lys Lys
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Cys Pro Gly Ser Ile Val Gly Gly Cys Val Ala His Pro His Ser Trp
 945 950 955 960

Pro Trp Gln Val Ser Leu Arg Thr Arg Phe Gly Lys His Phe Cys Gly
 965 970 975

Gly Thr Leu Ile Ser Pro Glu Trp Val Leu Thr Ala Ala His Cys Leu
 980 985 990

Lys Lys Ser Ser Arg Pro Ser Ser Tyr Lys Val Ile Leu Gly Ala His
 995 1000 1005

Gln Glu Val Asn Leu Glu Ser His Val Gln Glu Ile Glu Val Ser
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Arg Leu Phe Leu Glu Pro Thr Gln Ala Asp Ile Ala Leu Leu Lys
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Leu Ser Arg Pro Ala Val Ile Thr Asp Lys Val Met Pro Ala Cys
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Leu Pro Ser Pro Asp Tyr Met Val Thr Ala Arg Thr Glu Cys Tyr
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Ile Thr Gly Trp Gly Glu Thr Gln Gly Thr Phe Gly Thr Gly Leu
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His Tyr Lys Tyr Ile Cys Ala Glu His Leu Ala Arg Gly Thr Asp
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Asp Lys Tyr Ile Leu Gln Gly Val Thr Ser Trp Gly Leu Gly Cys
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 Met Asp Pro Pro Arg Pro Ala Leu Leu Ala Leu
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ctg gcg ctg cct gcg ctg ctg ctg ctg ctg gcg ggc gcc agg gcc 159
 Leu Ala Leu Pro Ala Leu Leu Leu Leu Leu Leu Ala Gly Ala Arg Ala
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gaa gag gaa atg ctg gaa aat gtc agc ctg gtc tgt cca aaa gat gcg 207
 Glu Glu Glu Met Leu Glu Asn Val Ser Leu Val Cys Pro Lys Asp Ala
 30 35 40

acc cga ttc aag cac ctc cgg aag tac aca tac aac tat gag gct gag 255
 Thr Arg Phe Lys His Leu Arg Lys Tyr Thr Tyr Asn Tyr Glu Ala Glu
 45 50 55

agt tcc agt gga gtc cct ggg act gct gat tca aga agt gcc acc agg 303
 Ser Ser Ser Gly Val Pro Gly Thr Ala Asp Ser Arg Ser Ala Thr Arg
 60 65 70 75

atc aac tgc aag gtt gag ctg gag gtt ccc cag ctc tgc agc ttc atc 351
 Ile Asn Cys Lys Val Glu Leu Glu Val Pro Gln Leu Cys Ser Phe Ile
 80 85 90

ctg aag acc agc cag tgc atc ctg aaa gag gtg tat ggc ttc aac cct 399
 Leu Lys Thr Ser Gln Cys Ile Leu Lys Glu Val Tyr Gly Phe Asn Pro
 95 100 105

gag ggc aaa gcc ttg ctg aag aaa acc aag aac tct gag gag ttt gct 447
Glu Gly Lys Ala Leu Leu Lys Lys Thr Lys Asn Ser Glu Glu Phe Ala
110 115 120

gca gcc atg tcc agg tat gag ctc aag ctg gcc att cca gaa ggg aag 495
Ala Ala Met Ser Arg Tyr Glu Leu Lys Leu Ala Ile Pro Glu Gly Lys
125 130 135

cag gtt ttc ctt tac ccg gag aaa gat gaa cct act tac atc ctg aac 543
Gln Val Phe Leu Tyr Pro Glu Lys Asp Glu Pro Thr Tyr Ile Leu Asn
140 145 150 155

atc aag agg ggc atc att tct gcc ctc ctg gtt ccc cca gag aca gaa 591
Ile Lys Arg Gly Ile Ile Ser Ala Leu Leu Val Pro Pro Glu Thr Glu
160 165 170

gaa gcc aag caa gtg ttg ttt ctg gat acc gtg tat gga aac tgc tcc 639
Glu Ala Lys Gln Val Leu Phe Leu Asp Thr Val Tyr Gly Asn Cys Ser
175 180 185

act cac ttt acc gtc aag acg agg aag ggc aat gtg gca aca gaa ata 687
Thr His Phe Thr Val Lys Thr Arg Lys Gly Asn Val Ala Thr Glu Ile
190 195 200

tcc act gaa aga gac ctg ggg cag tgt gat cgc ttc aag ccc atc cgc 735
Ser Thr Glu Arg Asp Leu Gly Gln Cys Asp Arg Phe Lys Pro Ile Arg
205 210 215

aca ggc atc agc cca ctt gct ctc atc aaa ggc atg acc cgc ccc ttg 783
Thr Gly Ile Ser Pro Leu Ala Leu Ile Lys Gly Met Thr Arg Pro Leu
220 225 230 235

tca act ctg atc agc agc agc cag tcc tgt cag tac aca ctg gac gct 831
Ser Thr Leu Ile Ser Ser Ser Gln Ser Cys Gln Tyr Thr Leu Asp Ala
240 245 250

aag agg aag cat gtg gca gaa gcc atc tgc aag gag caa cac ctc ttc 879
Lys Arg Lys His Val Ala Glu Ala Ile Cys Lys Glu Gln His Leu Phe
255 260 265

ctg cct ttc tcc tac aag aat aag tat ggg atg gta gca caa gtg aca 927
Leu Pro Phe Ser Tyr Lys Asn Lys Tyr Gly Met Val Ala Gln Val Thr
270 275 280

cag act ttg aaa ctt gaa gac aca cca aag atc aac agc cgc ttc ttt 975
Gln Thr Leu Lys Leu Glu Asp Thr Pro Lys Ile Asn Ser Arg Phe Phe
285 290 295

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Gly Glu Gly Thr Lys Lys Met Gly Leu Ala Phe Glu Ser Thr Lys Ser
300 305 310 315

aca tca cct cca aag cag gcc gaa gct gtt ttg aag act gtc cag gaa 1071
Thr Ser Pro Pro Lys Gln Ala Glu Ala Val Leu Lys Thr Val Gln Glu
320 325 330

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| ttc aat aag ctg gtt act gag ctg aga ggc ctc agt gat gaa gca gtc Phe Asn Lys Leu Val Thr Glu Leu Arg Gly Leu Ser Asp Glu Ala Val 350 355 360 | 1167 |
| aca tct ctc ttg cca cag ctg att gag gtg tcc agc ccc atc act tta Thr Ser Leu Leu Pro Gln Leu Ile Glu Val Ser Ser Pro Ile Thr Leu 365 370 375 | 1215 |
| caa gcc ttg gtt cag tgt gga cag cct cag tgc tcc act cac atc ctc Gln Ala Leu Val Gln Cys Gly Gln Pro Gln Cys Ser Thr His Ile Leu 380 385 390 395 | 1263 |
| cag tgg ctg aaa cgt gtg cat gcc aac ccc ctt ctg ata gat gtg gtc Gln Trp Leu Lys Arg Val His Ala Asn Pro Leu Leu Ile Asp Val Val 400 405 410 | 1311 |
| acc tac ctg gtg gcc ctg atc ccc gag ccc tca gca cag cag ctg cga Thr Tyr Leu Val Ala Leu Ile Pro Glu Pro Ser Ala Gln Gln Leu Arg 415 420 425 | 1359 |
| gag atc ttc aac atg gcg agg gat cag cgc agc cga gcc acc ttg tat Glu Ile Phe Asn Met Ala Arg Asp Gln Arg Ser Arg Ala Thr Leu Tyr 430 435 440 | 1407 |
| gcg ctg agc cac gcg gtc aac aac tat cat aag aca aac cct aca ggg Ala Leu Ser His Ala Val Asn Asn Tyr His Lys Thr Asn Pro Thr Gly 445 450 455 | 1455 |
| acc cag gag ctg ctg gac att gct aat tac ctg atg gaa cag att caa Thr Gln Glu Leu Leu Asp Ile Ala Asn Tyr Leu Met Glu Gln Ile Gln 460 465 470 475 | 1503 |
| gat gac tgc act ggg gat gaa gat tac acc tat ttg att ctg cgg gtc Asp Asp Cys Thr Gly Asp Glu Asp Tyr Thr Tyr Leu Ile Leu Arg Val 480 485 490 | 1551 |
| att gga aat atg ggc caa acc atg gag cag tta act cca gaa ctc aag Ile Gly Asn Met Gly Gln Thr Met Glu Gln Leu Thr Pro Glu Leu Lys 495 500 505 | 1599 |
| tct tca atc ctg aaa tgt gtc caa agt aca aag cca tca ctg atg atc Ser Ser Ile Leu Lys Cys Val Gln Ser Thr Lys Pro Ser Leu Met Ile 510 515 520 | 1647 |
| cag aaa gct gcc atc cag gct ctg cgg aaa atg gag cct aaa gac aag Gln Lys Ala Ala Ile Gln Ala Leu Arg Lys Met Glu Pro Lys Asp Lys 525 530 535 | 1695 |
| gac cag gag gtt ctt ctt cag act ttc ctt gat gat gct tct ccg gga Asp Gln Glu Val Leu Leu Gln Thr Phe Leu Asp Asp Ala Ser Pro Gly 540 545 550 555 | 1743 |

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|---|------|
| ttg gga gag ggt ttt gcc agt ctc cat gac ctc cag ctc ctg Leu Gly Glu Glu Leu Gly Phe Ala Ser Leu His Asp Leu Gln Leu Leu 780 785 790 795 | 2463 |
| gga aag ctg ctt ctg atg ggt gcc cgc act ctg cag ggg atc ccc cag Gly Lys Leu Leu Leu Met Gly Ala Arg Thr Leu Gln Gly Ile Pro Gln 800 805 810 | 2511 |
| atg att gga gag gtc atc agg aag ggc tca aag aat gac ttt ttt ctt Met Ile Gly Glu Val Ile Arg Lys Gly Ser Lys Asn Asp Phe Phe Leu 815 820 825 | 2559 |
| cac tac atc ttc atg gag aat gcc ttt gaa ctc ccc act gga gct gga His Tyr Ile Phe Met Glu Asn Ala Phe Glu Leu Pro Thr Gly Ala Gly 830 835 840 | 2607 |
| tta cag ttg caa ata tct tca tct gga gtc att gct ccc gga gcc aag Leu Gln Leu Gln Ile Ser Ser Ser Gly Val Ile Ala Pro Gly Ala Lys 845 850 855 | 2655 |
| gct gga gta aaa ctg gaa gta gcc aac atg cag gct gaa ctg gtg gca Ala Gly Val Lys Leu Glu Val Ala Asn Met Gln Ala Glu Leu Val Ala 860 865 870 875 | 2703 |
| aaa ccc tcc gtg tct gtg gag ttt gtg aca aat atg ggc atc atc att Lys Pro Ser Val Ser Val Glu Phe Val Thr Asn Met Gly Ile Ile Ile 880 885 890 | 2751 |
| ccg gac ttc gct agg agt ggg gtc cag atg aac acc aac ttc ttc cac Pro Asp Phe Ala Arg Ser Gly Val Gln Met Asn Thr Asn Phe Phe His 895 900 905 | 2799 |
| gag tcg ggt ctg gag gct cat gtt gcc cta aaa cct ggg aag ctg aag Glu Ser Gly Leu Glu Ala His Val Ala Leu Lys Pro Gly Lys Leu Lys 910 915 920 | 2847 |
| ttt atc att cct tcc cca aag aga cca gtc aag ctg ctc agt gga ggc Phe Ile Ile Pro Ser Pro Lys Arg Pro Val Lys Leu Leu Ser Gly Gly 925 930 935 | 2895 |
| aac aca tta cat ttg gtc tct acc acc aaa acg gag gtg atc cca cct Asn Thr Leu His Leu Val Ser Thr Thr Lys Thr Glu Val Ile Pro Pro 940 945 950 955 | 2943 |
| ctc att gag aac agg cag tcc tgg tca gtt tgc aag caa gtc ttt cct Leu Ile Glu Asn Arg Gln Ser Trp Ser Val Cys Lys Gln Val Phe Pro 960 965 970 | 2991 |
| ggc ctg aat tac tgc acc tca ggc gct tac tcc aac gcc agc tcc aca Gly Leu Asn Tyr Cys Thr Ser Gly Ala Tyr Ser Asn Ala Ser Ser Thr 975 980 985 | 3039 |
| gac tcc gcc tcc tac tat ccg ctg acc ggg gac acc aga tta gag ctg Asp Ser Ala Ser Tyr Tyr Pro Leu Thr Gly Asp Thr Arg Leu Glu Leu 990 995 1000 | 3087 |

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|----------------------------|--|--|----------------------------|------|
| gaa ctg Glu Leu 1005 | agg cct aca gga gag Arg Pro Thr Gly Glu 1010 | att gag cag tat tct Ile Glu Gln Tyr Ser 1015 | gtc agc gca Val Ser Ala | 3132 |
| acc tat Thr Tyr 1020 | gag ctc cag aga gag Glu Leu Gln Arg Glu 1025 | gac aga gcc ttg gtg Asp Arg Ala Leu Val 1030 | gat acc ctg Asp Thr Leu | 3177 |
| aag ttt Lys Phe 1035 | gta act caa gca gaa Val Thr Gln Ala Glu 1040 | ggc ggc aag cag act Gly Ala Lys Gln Thr 1045 | gag gct acc Glu Ala Thr | 3222 |
| atg aca Met Thr 1050 | ttc aaa tat aat cgg Phe Lys Tyr Asn Arg 1055 | cag agt atg acc ttg Gln Ser Met Thr Leu 1060 | tcc agt gaa Ser Ser Glu | 3267 |
| gtc caa Val Gln 1065 | att ccg gat ttt gat Ile Pro Asp Phe Asp 1070 | gtt gac ctc gga aca Val Asp Leu Gly Thr 1075 | atc ctc aga Ile Leu Arg | 3312 |
| gtt aat Val Asn 1080 | gat gaa tct act gag Asp Glu Ser Thr Glu 1085 | ggc aaa acg tct tac Gly Lys Thr Ser Tyr 1090 | aga ctc acc Arg Leu Thr | 3357 |
| ctg gac Leu Asp 1095 | att cag aac aag aaa Ile Gln Asn Lys Lys 1100 | att act gag gtc gcc Ile Thr Glu Val Ala 1105 | ctc atg ggc Leu Met Gly | 3402 |
| cac cta His Leu 1110 | agt tgt gac aca aag Ser Cys Asp Thr Lys 1115 | gaa gaa aga aaa atc Glu Glu Arg Lys Ile 1120 | aag ggt gtt Lys Gly Val | 3447 |
| att tcc Ile Ser 1125 | ata ccc cgt ttg caa Ile Pro Arg Leu Gln 1130 | gca gaa gcc aga agt Ala Glu Ala Arg Ser 1135 | gag atc ctc Glu Ile Leu | 3492 |
| gcc cac Ala His 1140 | tgg tcg cct gcc aaa Trp Ser Pro Ala Lys 1145 | ctg ctt ctc caa atg Leu Leu Leu Gln Met 1150 | gac tca tct Asp Ser Ser | 3537 |
| gct aca Ala Thr 1155 | gct tat ggc tcc aca Ala Tyr Gly Ser Thr 1160 | gtt tcc aag agg gtg Val Ser Lys Arg Val 1165 | gca tgg cat Ala Trp His | 3582 |
| tat gat Tyr Asp 1170 | gaa gag aag att gaa Glu Glu Lys Ile Glu 1175 | ttt gaa tgg aac aca Phe Glu Trp Asn Thr 1180 | ggc acc aat Gly Thr Asn | 3627 |
| gta gat Val Asp 1185 | acc aaa aaa atg act Thr Lys Lys Met Thr 1190 | tcc aat ttc cct gtg Ser Asn Phe Pro Val 1195 | gat ctc tcc Asp Leu Ser | 3672 |
| gat tat Asp Tyr 1200 | cct aag agc ttg cat Pro Lys Ser Leu His 1205 | atg tat gct aat aga Met Tyr Ala Asn Arg 1210 | ctc ctg gat Leu Leu Asp | 3717 |

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|--|--|--|------|
| cac aga gtc cct caa aca gac His Arg Val Pro Gln Thr Asp 1215 | atg act ttc cgg cac Met Thr Phe Arg His 1225 | gtg ggt tcc Val Gly Ser 1225 | 3762 |
| aaa tta ata gtt gca atg agc Lys Leu Ile Val Ala Met Ser 1230 | tca tgg ctt cag Ser Trp Leu Gln Lys 1235 | aag gca tct ggg Ala Ser Gly 1240 | 3807 |
| agt ctt cct tat acc cag act Ser Leu Pro Tyr Thr Gln Thr 1245 | ttg caa gac cac Leu Gln Asp His 1250 | ctc aat agc ctg Leu Asn Ser Leu 1255 | 3852 |
| aag gag ttc aac ctc cag aac Lys Glu Phe Asn Leu Gln Asn 1260 | atg gga ttg cca gac Met Gly Leu Pro Asp 1265 | ttc cac atc Phe His Ile 1270 | 3897 |
| cca gaa aac ctc ttc tta aaa Pro Glu Asn Leu Phe Leu Lys 1275 | agc gat ggc cgg gtc Ser Asp Gly Arg Val 1280 | aaa tat acc Lys Tyr Thr 1285 | 3942 |
| ttg aac aag aac agt ttg aaa Leu Asn Lys Asn Ser Leu Lys 1290 | att gag att cct ttg Ile Glu Ile Pro Leu 1295 | cct ttt ggt Pro Phe Gly 1300 | 3987 |
| ggc aaa tcc tcc aga gat cta Gly Lys Ser Ser Arg Asp Leu 1305 | aag atg tta gag act Lys Met Leu Glu Thr 1310 | gtt agg aca Val Arg Thr 1315 | 4032 |
| cca gcc ctc cac ttc aag tct Pro Ala Leu His Phe Lys Ser 1320 | gtg gga ttc cat ctg Val Gly Phe His Leu 1325 | cca tct cga Pro Ser Arg 1330 | 4077 |
| gag ttc caa gtc cct act ttt Glu Phe Gln Val Pro Thr Phe 1335 | acc att ccc aag ttg Thr Ile Pro Lys Leu 1340 | tat caa ctg Tyr Gln Leu 1345 | 4122 |
| caa gtg cct ctc ctg ggt gtt Gln Val Pro Leu Leu Gly Val 1350 | cta gac ctc tcc acg Leu Asp Leu Ser Thr 1355 | aat gtc tac Asn Val Tyr 1360 | 4167 |
| agc aac ttg tac aac tgg tcc Ser Asn Leu Tyr Asn Trp Ser 1365 | gcc tcc tac agt ggt Ala Ser Tyr Ser Gly 1370 | ggc aac acc Gly Asn Thr 1375 | 4212 |
| agc aca gac cat ttc agc ctt Ser Thr Asp His Phe Ser Leu 1380 | cgg gct cgt tac cac Arg Ala Arg Tyr His 1385 | atg aag gct Met Lys Ala 1390 | 4257 |
| gac tct gtg gtt gac ctg ctt Asp Ser Val Val Asp Leu Leu 1395 | tcc tac aat gtg caa Ser Tyr Asn Val Gln 1400 | gga tct gga Gly Ser Gly 1405 | 4302 |
| gaa aca aca tat gac cac aag Glu Thr Thr Tyr Asp His Lys 1410 | aat acg ttc aca cta Asn Thr Phe Thr Leu 1415 | tca tgt gat Ser Cys Asp 1420 | 4347 |

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|-----------------------------|---------------------|-------------|------|
| ggg tct cta cgc cac aaa ttt | cta gat tcg aat atc | aaa ttc agt | 4392 |
| Gly Ser Leu Arg His Lys Phe | Leu Asp Ser Asn Ile | Lys Phe Ser | |
| 1425 | 1430 | 1435 | |
| cat gta gaa aaa ctt gga aac | aac cca gtc tca aaa | ggg tta cta | 4437 |
| His Val Glu Lys Leu Gly Asn | Asn Pro Val Ser Lys | Gly Leu Leu | |
| 1440 | 1445 | 1450 | |
| ata ttc gat gca tct agt tcc | tgg gga cca cag atg | tct gct tca | 4482 |
| Ile Phe Asp Ala Ser Ser Ser | Trp Gly Pro Gln Met | Ser Ala Ser | |
| 1455 | 1460 | 1465 | |
| gtt cat ttg gac tcc aaa aag | aaa cag cat ttg ttt | gtc aaa gaa | 4527 |
| Val His Leu Asp Ser Lys Lys | Lys Gln His Leu Phe | Val Lys Glu | |
| 1470 | 1475 | 1480 | |
| gtc aag att gat ggg cag ttc | aga gtc tct tcg ttc | tat gct aaa | 4572 |
| Val Lys Ile Asp Gly Gln Phe | Arg Val Ser Ser Phe | Tyr Ala Lys | |
| 1485 | 1490 | 1495 | |
| ggc aca tat ggc ctg tct tgt | cag agg gat cct aac | act ggc cgg | 4617 |
| Gly Thr Tyr Gly Leu Ser Cys | Gln Arg Asp Pro Asn | Thr Gly Arg | |
| 1500 | 1505 | 1510 | |
| ctc aat gga gag tcc aac ctg | agg ttt aac tcc tcc | tac ctc caa | 4662 |
| Leu Asn Gly Glu Ser Asn Leu | Arg Phe Asn Ser Ser | Tyr Leu Gln | |
| 1515 | 1520 | 1525 | |
| ggc acc aac cag ata aca gga | aga tat gaa gat gga | acc ctc tcc | 4707 |
| Gly Thr Asn Gln Ile Thr Gly | Arg Tyr Glu Asp Gly | Thr Leu Ser | |
| 1530 | 1535 | 1540 | |
| ctc acc tcc acc tct gat ctg | caa agt ggc atc att | aaa aat act | 4752 |
| Leu Thr Ser Thr Ser Asp Leu | Gln Ser Gly Ile Ile | Lys Asn Thr | |
| 1545 | 1550 | 1555 | |
| gct tcc cta aag tat gag aac | tac gag ctg act tta | aaa tct gac | 4797 |
| Ala Ser Leu Lys Tyr Glu Asn | Tyr Glu Leu Thr Leu | Lys Ser Asp | |
| 1560 | 1565 | 1570 | |
| acc aat ggg aag tat aag aac | ttt gcc act tct aac | aag atg gat | 4842 |
| Thr Asn Gly Lys Tyr Lys Asn | Phe Ala Thr Ser Asn | Lys Met Asp | |
| 1575 | 1580 | 1585 | |
| atg acc ttc tct aag caa aat | gca ctg ctg cgt tct | gaa tat cag | 4887 |
| Met Thr Phe Ser Lys Gln Asn | Ala Leu Leu Arg Ser | Glu Tyr Gln | |
| 1590 | 1595 | 1600 | |
| gct gat tac gag tca ttg agg | ttc ttc agc ctg ctt | tct gga tca | 4932 |
| Ala Asp Tyr Glu Ser Leu Arg | Phe Phe Ser Leu Leu | Ser Gly Ser | |
| 1605 | 1610 | 1615 | |
| cta aat tcc cat ggt ctt gag | tta aat gct gac atc | tta ggc act | 4977 |
| Leu Asn Ser His Gly Leu Glu | Leu Asn Ala Asp Ile | Leu Gly Thr | |
| 1620 | 1625 | 1630 | |

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|-----------------------------|---------------------|-------------|------|
| gac aaa att aat agt ggt gct | cac aag gcg aca cta | agg att ggc | 5022 |
| Asp Lys Ile Asn Ser Gly Ala | His Lys Ala Thr Leu | Arg Ile Gly | |
| 1635 | 1640 | 1645 | |
| caa gat gga ata tct acc agt | gca acg acc aac ttg | aag tgt agt | 5067 |
| Gln Asp Gly Ile Ser Thr Ser | Ala Thr Thr Asn Leu | Lys Cys Ser | |
| 1650 | 1655 | 1660 | |
| ctc ctg gtg ctg gag aat gag | ctg aat gca gag ctt | ggc ctc tct | 5112 |
| Leu Leu Val Leu Glu Asn Glu | Leu Asn Ala Glu Leu | Gly Leu Ser | |
| 1665 | 1670 | 1675 | |
| ggg gca tct atg aaa tta aca | aca aat ggc cgc ttc | agg gaa cac | 5157 |
| Gly Ala Ser Met Lys Leu Thr | Thr Asn Gly Arg Phe | Arg Glu His | |
| 1680 | 1685 | 1690 | |
| aat gca aaa ttc agt ctg gat | ggg aaa gcc gcc ctc | aca gag cta | 5202 |
| Asn Ala Lys Phe Ser Leu Asp | Gly Lys Ala Ala Leu | Thr Glu Leu | |
| 1695 | 1700 | 1705 | |
| tca ctg gga agt gct tat cag | gcc atg att ctg ggt | gtc gac agc | 5247 |
| Ser Leu Gly Ser Ala Tyr Gln | Ala Met Ile Leu Gly | Val Asp Ser | |
| 1710 | 1715 | 1720 | |
| aaa aac att ttc aac ttc aag | gtc agt caa gaa gga | ctt aag ctc | 5292 |
| Lys Asn Ile Phe Asn Phe Lys | Val Ser Gln Glu Gly | Leu Lys Leu | |
| 1725 | 1730 | 1735 | |
| tca aat gac atg atg ggc tca | tat gct gaa atg aaa | ttt gac cac | 5337 |
| Ser Asn Asp Met Met Gly Ser | Tyr Ala Glu Met Lys | Phe Asp His | |
| 1740 | 1745 | 1750 | |
| aca aac agt ctg aac att gca | ggc tta tca ctg gac | ttc tct tca | 5382 |
| Thr Asn Ser Leu Asn Ile Ala | Gly Leu Ser Leu Asp | Phe Ser Ser | |
| 1755 | 1760 | 1765 | |
| aaa ctt gac aac att tac agc | tct gac aag ttt tat | aag caa act | 5427 |
| Lys Leu Asp Asn Ile Tyr Ser | Ser Asp Lys Phe Tyr | Lys Gln Thr | |
| 1770 | 1775 | 1780 | |
| gtt aat tta cag cta cag ccc | tat tct ctg gta act | act tta aac | 5472 |
| Val Asn Leu Gln Leu Gln Pro | Tyr Ser Leu Val Thr | Thr Leu Asn | |
| 1785 | 1790 | 1795 | |
| agt gac ctg aaa tac aat gct | ctg gat ctc acc aac | aat ggg aaa | 5517 |
| Ser Asp Leu Lys Tyr Asn Ala | Leu Asp Leu Thr Asn | Asn Gly Lys | |
| 1800 | 1805 | 1810 | |
| cta cgg cta gaa ccc ctg aag | ctg cat gtg gct ggt | aac cta aaa | 5562 |
| Leu Arg Leu Glu Pro Leu Lys | Leu His Val Ala Gly | Asn Leu Lys | |
| 1815 | 1820 | 1825 | |
| gga gcc tac caa aat aat gaa | ata aaa cac atc tat | gcc atc tct | 5607 |
| Gly Ala Tyr Gln Asn Asn Glu | Ile Lys His Ile Tyr | Ala Ile Ser | |
| 1830 | 1835 | 1840 | |

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|-----------------------------|---------------------|-------------|------|
| tct gct gcc tta tca gca agc | tat aaa gca gac act | ggt gct aag | 5652 |
| Ser Ala Ala Leu Ser Ala Ser | Tyr Lys Ala Asp Thr | Val Ala Lys | |
| 1845 | 1850 | 1855 | |
| ggt cag ggt gtg gag ttt agc | cat cgg ctc aac aca | gac atc gct | 5697 |
| Val Gln Gly Val Glu Phe Ser | His Arg Leu Asn Thr | Asp Ile Ala | |
| 1860 | 1865 | 1870 | |
| ggg ctg gct tca gcc att gac | atg agc aca aac tat | aat tca gac | 5742 |
| Gly Leu Ala Ser Ala Ile Asp | Met Ser Thr Asn Tyr | Asn Ser Asp | |
| 1875 | 1880 | 1885 | |
| tca ctg cat ttc agc aat gtc | ttc cgt tct gta atg | gcc ccg ttt | 5787 |
| Ser Leu His Phe Ser Asn Val | Phe Arg Ser Val Met | Ala Pro Phe | |
| 1890 | 1895 | 1900 | |
| acc atg acc atc gat gca cat | aca aat ggc aat ggg | aaa ctc gct | 5832 |
| Thr Met Thr Ile Asp Ala His | Thr Asn Gly Asn Gly | Lys Leu Ala | |
| 1905 | 1910 | 1915 | |
| ctc tgg gga gaa cat act ggg | cag ctg tat agc aaa | ttc ctg ttg | 5877 |
| Leu Trp Gly Glu His Thr Gly | Gln Leu Tyr Ser Lys | Phe Leu Leu | |
| 1920 | 1925 | 1930 | |
| aaa gca gaa cct ctg gca ttt | act ttc tct cat gat | tac aaa ggc | 5922 |
| Lys Ala Glu Pro Leu Ala Phe | Thr Phe Ser His Asp | Tyr Lys Gly | |
| 1935 | 1940 | 1945 | |
| tcc aca agt cat cat ctc gtg | tct agg aaa agc atc | agt gca gct | 5967 |
| Ser Thr Ser His His Leu Val | Ser Arg Lys Ser Ile | Ser Ala Ala | |
| 1950 | 1955 | 1960 | |
| ctt gaa cac aaa gtc agt gcc | ctg ctt act cca gct | gag cag aca | 6012 |
| Leu Glu His Lys Val Ser Ala | Leu Leu Thr Pro Ala | Glu Gln Thr | |
| 1965 | 1970 | 1975 | |
| ggc acc tgg aaa ctc aag acc | caa ttt aac aac aat | gaa tac agc | 6057 |
| Gly Thr Trp Lys Leu Lys Thr | Gln Phe Asn Asn Asn | Glu Tyr Ser | |
| 1980 | 1985 | 1990 | |
| cag gac ttg gat gct tac aac | act aaa gat aaa att | ggc gtg gag | 6102 |
| Gln Asp Leu Asp Ala Tyr Asn | Thr Lys Asp Lys Ile | Gly Val Glu | |
| 1995 | 2000 | 2005 | |
| ctt act gga cga act ctg gct | gac cta act cta cta | gac tcc cca | 6147 |
| Leu Thr Gly Arg Thr Leu Ala | Asp Leu Thr Leu Leu | Asp Ser Pro | |
| 2010 | 2015 | 2020 | |
| att aaa gtg cca ctt tta ctc | agt gag ccc atc aat | atc att gat | 6192 |
| Ile Lys Val Pro Leu Leu Leu | Ser Glu Pro Ile Asn | Ile Ile Asp | |
| 2025 | 2030 | 2035 | |
| gct tta gag atg aga gat gcc | gtt gag aag ccc caa | gaa ttt aca | 6237 |
| Ala Leu Glu Met Arg Asp Ala | Val Glu Lys Pro Gln | Glu Phe Thr | |
| 2040 | 2045 | 2050 | |

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|-----------------------------|---------------------|-------------|------|
| gaa aaa ctg cag cag ctt aag | aga cac ata cag aat | ata gac atc | 6912 |
| Glu Lys Leu Gln Gln Leu Lys | Arg His Ile Gln Asn | Ile Asp Ile | |
| 2265 | 2270 | 2275 | |
| cag cac cta gct gga aag tta | aaa caa cac att gag | gct att gat | 6957 |
| Gln His Leu Ala Gly Lys Leu | Lys Gln His Ile Glu | Ala Ile Asp | |
| 2280 | 2285 | 2290 | |
| gtt aga gtg ctt tta gat caa | ttg gga act aca att | tca ttt gaa | 7002 |
| Val Arg Val Leu Leu Asp Gln | Leu Gly Thr Thr Ile | Ser Phe Glu | |
| 2295 | 2300 | 2305 | |
| aga ata aat gat gtt ctt gag | cat gtc aaa cac ttt | gtt ata aat | 7047 |
| Arg Ile Asn Asp Val Leu Glu | His Val Lys His Phe | Val Ile Asn | |
| 2310 | 2315 | 2320 | |
| ctt att ggg gat ttt gaa gta | gct gag aaa atc aat | gcc ttc aga | 7092 |
| Leu Ile Gly Asp Phe Glu Val | Ala Glu Lys Ile Asn | Ala Phe Arg | |
| 2325 | 2330 | 2335 | |
| gcc aaa gtc cat gag tta atc | gag agg tat gaa gta | gac caa caa | 7137 |
| Ala Lys Val His Glu Leu Ile | Glu Arg Tyr Glu Val | Asp Gln Gln | |
| 2340 | 2345 | 2350 | |
| atc cag gtt tta atg gat aaa | tta gta gag ttg gcc | cac caa tac | 7182 |
| Ile Gln Val Leu Met Asp Lys | Leu Val Glu Leu Ala | His Gln Tyr | |
| 2355 | 2360 | 2365 | |
| aag ttg aag gag act att cag | aag cta agc aat gtc | cta caa caa | 7227 |
| Lys Leu Lys Glu Thr Ile Gln | Lys Leu Ser Asn Val | Leu Gln Gln | |
| 2370 | 2375 | 2380 | |
| gtt aag ata aaa gat tac ttt | gag aaa ttg gtt gga | ttt att gat | 7272 |
| Val Lys Ile Lys Asp Tyr Phe | Glu Lys Leu Val Gly | Phe Ile Asp | |
| 2385 | 2390 | 2395 | |
| gat gct gtc aag aag ctt aat | gaa tta tct ttt aaa | aca ttc att | 7317 |
| Asp Ala Val Lys Lys Leu Asn | Glu Leu Ser Phe Lys | Thr Phe Ile | |
| 2400 | 2405 | 2410 | |
| gaa gat gtt aac aaa ttc ctt | gac atg ttg ata aag | aaa tta aag | 7362 |
| Glu Asp Val Asn Lys Phe Leu | Asp Met Leu Ile Lys | Lys Leu Lys | |
| 2415 | 2420 | 2425 | |
| tca ttt gat tac cac cag ttt | gta gat gaa acc aat | gac aaa atc | 7407 |
| Ser Phe Asp Tyr His Gln Phe | Val Asp Glu Thr Asn | Asp Lys Ile | |
| 2430 | 2435 | 2440 | |
| cgt gag gtg act cag aga ctc | aat ggt gaa att cag | gct ctg gaa | 7452 |
| Arg Glu Val Thr Gln Arg Leu | Asn Gly Glu Ile Gln | Ala Leu Glu | |
| 2445 | 2450 | 2455 | |
| cta cca caa aaa gct gaa gca | tta aaa ctg ttt tta | gag gaa acc | 7497 |
| Leu Pro Gln Lys Ala Glu Ala | Leu Lys Leu Phe Leu | Glu Glu Thr | |
| 2460 | 2465 | 2470 | |

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|---------|---------|---------|------|---------|---------|------|---------|-----|------|
| aag gcc | aca gtt | gca gtg | tat | ctg gaa | agc cta | cag | gac acc | aaa | 7542 |
| Lys Ala | Thr Val | Ala Val | Tyr | Leu Glu | Ser Leu | Gln | Asp Thr | Lys | |
| 2475 | | | 2480 | | | 2485 | | | |
| ata acc | tta atc | atc aat | tgg | tta cag | gag gct | tta | agt tca | gca | 7587 |
| Ile Thr | Leu Ile | Ile Asn | Trp | Leu Gln | Glu Ala | Leu | Ser Ser | Ala | |
| 2490 | | | 2495 | | | 2500 | | | |
| tct ttg | gct cac | atg aag | gcc | aaa ttc | cga gag | act | cta gaa | gat | 7632 |
| Ser Leu | Ala His | Met Lys | Ala | Lys Phe | Arg Glu | Thr | Leu Glu | Asp | |
| 2505 | | | 2510 | | | 2515 | | | |
| aca cga | gac cga | atg tat | caa | atg gac | att cag | cag | gaa ctt | caa | 7677 |
| Thr Arg | Asp Arg | Met Tyr | Gln | Met Asp | Ile Gln | Gln | Glu Leu | Gln | |
| 2520 | | | 2525 | | | 2530 | | | |
| cga tac | ctg tct | ctg gta | ggc | cag gtt | tat agc | aca | ctt gtc | acc | 7722 |
| Arg Tyr | Leu Ser | Leu Val | Gly | Gln Val | Tyr Ser | Thr | Leu Val | Thr | |
| 2535 | | | 2540 | | | 2545 | | | |
| tac att | tct gat | tgg tgg | act | ctt gct | gct aag | aac | ctt act | gac | 7767 |
| Tyr Ile | Ser Asp | Trp Trp | Thr | Leu Ala | Ala Lys | Asn | Leu Thr | Asp | |
| 2550 | | | 2555 | | | 2560 | | | |
| ttt gca | gag caa | tat tct | atc | caa gat | tgg gct | aaa | cgt atg | aaa | 7812 |
| Phe Ala | Glu Gln | Tyr Ser | Ile | Gln Asp | Trp Ala | Lys | Arg Met | Lys | |
| 2565 | | | 2570 | | | 2575 | | | |
| gca ttg | gta gag | caa ggg | ttc | act gtt | cct gaa | atc | aag acc | atc | 7857 |
| Ala Leu | Val Glu | Gln Gly | Phe | Thr Val | Pro Glu | Ile | Lys Thr | Ile | |
| 2580 | | | 2585 | | | 2590 | | | |
| ctt ggg | acc atg | cct gcc | ttt | gaa gtc | agt ctt | cag | gct ctt | cag | 7902 |
| Leu Gly | Thr Met | Pro Ala | Phe | Glu Val | Ser Leu | Gln | Ala Leu | Gln | |
| 2595 | | | 2600 | | | 2605 | | | |
| aaa gct | acc ttc | cag aca | cct | gat ttt | ata gtc | ccc | cta aca | gat | 7947 |
| Lys Ala | Thr Phe | Gln Thr | Pro | Asp Phe | Ile Val | Pro | Leu Thr | Asp | |
| 2610 | | | 2615 | | | 2620 | | | |
| ttg agg | att cca | tca gtt | cag | ata aac | ttc aaa | gac | tta aaa | aat | 7992 |
| Leu Arg | Ile Pro | Ser Val | Gln | Ile Asn | Phe Lys | Asp | Leu Lys | Asn | |
| 2625 | | | 2630 | | | 2635 | | | |
| ata aaa | atc cca | tcc agg | ttt | tcc aca | cca gaa | ttt | acc atc | ctt | 8037 |
| Ile Lys | Ile Pro | Ser Arg | Phe | Ser Thr | Pro Glu | Phe | Thr Ile | Leu | |
| 2640 | | | 2645 | | | 2650 | | | |
| aac acc | ttc cac | att cct | tcc | ttt aca | att gac | ttt | gta gaa | atg | 8082 |
| Asn Thr | Phe His | Ile Pro | Ser | Phe Thr | Ile Asp | Phe | Val Glu | Met | |
| 2655 | | | 2660 | | | 2665 | | | |
| aaa gta | aag atc | atc aga | acc | att gac | cag atg | ctg | aac agt | gag | 8127 |
| Lys Val | Lys Ile | Ile Arg | Thr | Ile Asp | Gln Met | Leu | Asn Ser | Glu | |
| 2670 | | | 2675 | | | 2680 | | | |

| | | | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|------|
| ctg | cag | tgg | ccc | gtt | cca | gat | ata | tat | ctc | agg | gat | ctg | aag | gtg | 8172 |
| Leu | Gln | Trp | Pro | Val | Pro | Asp | Ile | Tyr | Leu | Arg | Asp | Leu | Lys | Val | |
| | 2685 | | | | | 2690 | | | | | 2695 | | | | |
| gag | gac | att | cct | cta | gcg | aga | atc | acc | ctg | cca | gac | ttc | cgt | tta | 8217 |
| Glu | Asp | Ile | Pro | Leu | Ala | Arg | Ile | Thr | Leu | Pro | Asp | Phe | Arg | Leu | |
| | 2700 | | | | | 2705 | | | | | 2710 | | | | |
| cca | gaa | atc | gca | att | cca | gaa | ttc | ata | atc | cca | act | ctc | aac | ctt | 8262 |
| Pro | Glu | Ile | Ala | Ile | Pro | Glu | Phe | Ile | Ile | Pro | Thr | Leu | Asn | Leu | |
| | 2715 | | | | | 2720 | | | | | 2725 | | | | |
| aat | gat | ttt | caa | gtt | cct | gac | ctt | cac | ata | cca | gaa | ttc | cag | ctt | 8307 |
| Asn | Asp | Phe | Gln | Val | Pro | Asp | Leu | His | Ile | Pro | Glu | Phe | Gln | Leu | |
| | 2730 | | | | | 2735 | | | | | 2740 | | | | |
| ccc | cac | atc | tca | cac | aca | att | gaa | gta | cct | act | ttt | ggc | aag | cta | 8352 |
| Pro | His | Ile | Ser | His | Thr | Ile | Glu | Val | Pro | Thr | Phe | Gly | Lys | Leu | |
| | 2745 | | | | | 2750 | | | | | 2755 | | | | |
| tac | agt | att | ctg | aaa | atc | caa | tct | cct | ctt | ttc | aca | tta | gat | gca | 8397 |
| Tyr | Ser | Ile | Leu | Lys | Ile | Gln | Ser | Pro | Leu | Phe | Thr | Leu | Asp | Ala | |
| | 2760 | | | | | 2765 | | | | | 2770 | | | | |
| aat | gct | gac | ata | ggg | aat | gga | acc | acc | tca | gca | aac | gaa | gca | ggt | 8442 |
| Asn | Ala | Asp | Ile | Gly | Asn | Gly | Thr | Thr | Ser | Ala | Asn | Glu | Ala | Gly | |
| | 2775 | | | | | 2780 | | | | | 2785 | | | | |
| atc | gca | gct | tcc | atc | act | gcc | aaa | gga | gag | tcc | aaa | tta | gaa | gtt | 8487 |
| Ile | Ala | Ala | Ser | Ile | Thr | Ala | Lys | Gly | Glu | Ser | Lys | Leu | Glu | Val | |
| | 2790 | | | | | 2795 | | | | | 2800 | | | | |
| ctc | aat | ttt | gat | ttt | caa | gca | aat | gca | caa | ctc | tca | aac | cct | aag | 8532 |
| Leu | Asn | Phe | Asp | Phe | Gln | Ala | Asn | Ala | Gln | Leu | Ser | Asn | Pro | Lys | |
| | 2805 | | | | | 2810 | | | | | 2815 | | | | |
| att | aat | ccg | ctg | gct | ctg | aag | gag | tca | gtg | aag | ttc | tcc | agc | aag | 8577 |
| Ile | Asn | Pro | Leu | Ala | Leu | Lys | Glu | Ser | Val | Lys | Phe | Ser | Ser | Lys | |
| | 2820 | | | | | 2825 | | | | | 2830 | | | | |
| tac | ctg | aga | acg | gag | cat | ggg | agt | gaa | atg | ctg | ttt | ttt | gga | aat | 8622 |
| Tyr | Leu | Arg | Thr | Glu | His | Gly | Ser | Glu | Met | Leu | Phe | Phe | Gly | Asn | |
| | 2835 | | | | | 2840 | | | | | 2845 | | | | |
| gct | att | gag | gga | aaa | tca | aac | aca | gtg | gca | agt | tta | cac | aca | gaa | 8667 |
| Ala | Ile | Glu | Gly | Lys | Ser | Asn | Thr | Val | Ala | Ser | Leu | His | Thr | Glu | |
| | 2850 | | | | | 2855 | | | | | 2860 | | | | |
| aaa | aat | aca | ctg | gag | ctt | agt | aat | gga | gtg | att | gtc | aag | ata | aac | 8712 |
| Lys | Asn | Thr | Leu | Glu | Leu | Ser | Asn | Gly | Val | Ile | Val | Lys | Ile | Asn | |
| | 2865 | | | | | 2870 | | | | | 2875 | | | | |
| aat | cag | ctt | acc | ctg | gat | agc | aac | act | aaa | tac | ttc | cac | aaa | ttg | 8757 |
| Asn | Gln | Leu | Thr | Leu | Asp | Ser | Asn | Thr | Lys | Tyr | Phe | His | Lys | Leu | |
| | 2880 | | | | | 2885 | | | | | 2890 | | | | |

| | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|------|
| aac atc | ccc aaa | ctg gac | ttc tct | agt cag | gct gac | ctg cgc | aac | 8802 |
| Asn Ile | Pro Lys | Leu Asp | Phe Ser | Ser Ser | Gln Ala | Asp | Leu Arg | Asn |
| 2895 | | | 2900 | | | 2905 | | |
| gag atc | aag aca | ctg ttg | aaa gct | ggc cac | ata gca | tgg act | tct | 8847 |
| Glu Ile | Lys Thr | Leu Leu | Lys Ala | Gly His | Ile Ala | Trp Thr | Ser | |
| 2910 | | | 2915 | | | 2920 | | |
| tct gga | aaa ggg | tca tgg | aaa tgg | gcc tgc | ccc aga | ttc tca | gat | 8892 |
| Ser Gly | Lys Gly | Ser Trp | Lys Trp | Ala Cys | Pro Arg | Phe Ser | Asp | |
| 2925 | | | 2930 | | | 2935 | | |
| gag gga | aca cat | gaa tca | caa att | agt ttc | acc ata | gaa gga | ccc | 8937 |
| Glu Gly | Thr His | Glu Ser | Gln Ile | Ser Phe | Thr Ile | Glu Gly | Pro | |
| 2940 | | | 2945 | | | 2950 | | |
| ctc act | tcc ttt | gga ctg | tcc aat | aag atc | aat agc | aaa cac | cta | 8982 |
| Leu Thr | Ser Phe | Gly Leu | Ser Asn | Lys Ile | Asn Ser | Lys His | Leu | |
| 2955 | | | 2960 | | | 2965 | | |
| aga gta | aac caa | aac ttg | gtt tat | gaa tct | ggc tcc | ctc aac | ttt | 9027 |
| Arg Val | Asn Gln | Asn Leu | Val Tyr | Glu Ser | Gly Ser | Leu Asn | Phe | |
| 2970 | | | 2975 | | | 2980 | | |
| tct aaa | ctt gaa | att caa | tca caa | gtc gat | tcc cag | cat gtg | ggc | 9072 |
| Ser Lys | Leu Glu | Ile Gln | Ser Gln | Val Asp | Ser Gln | His Val | Gly | |
| 2985 | | | 2990 | | | 2995 | | |
| cac agt | gtt cta | act gct | aaa ggc | atg gca | ctg ttt | gga gaa | ggg | 9117 |
| His Ser | Val Leu | Thr Ala | Lys Gly | Met Ala | Leu Phe | Gly Glu | Gly | |
| 3000 | | | 3005 | | | 3010 | | |
| aag gca | gag ttt | act ggg | agg cat | gat gct | cat tta | aat gga | aag | 9162 |
| Lys Ala | Glu Phe | Thr Gly | Arg His | Asp Ala | His Leu | Asn Gly | Lys | |
| 3015 | | | 3020 | | | 3025 | | |
| gtt att | gga act | ttg aaa | aat tct | ctt ttc | ttt tca | gcc cag | cca | 9207 |
| Val Ile | Gly Thr | Leu Lys | Asn Ser | Leu Phe | Phe Ser | Ala Gln | Pro | |
| 3030 | | | 3035 | | | 3040 | | |
| ttt gag | atc acg | gca tcc | aca aac | aat gaa | ggg aat | ttg aaa | gtt | 9252 |
| Phe Glu | Ile Thr | Ala Ser | Thr Asn | Asn Asn | Glu Gly | Asn Leu | Lys Val | |
| 3045 | | | 3050 | | | 3055 | | |
| cgt ttt | cca tta | agg tta | aca ggg | aag ata | gac ttc | ctg aat | aac | 9297 |
| Arg Phe | Pro Leu | Arg Leu | Thr Gly | Lys Ile | Asp Phe | Leu Asn | Asn | |
| 3060 | | | 3065 | | | 3070 | | |
| tat gca | ctg ttt | ctg agt | ccc agt | gcc cag | caa gca | agt tgg | caa | 9342 |
| Tyr Ala | Leu Phe | Leu Ser | Pro Ser | Ala Gln | Gln Ala | Ser Trp | Gln | |
| 3075 | | | 3080 | | | 3085 | | |
| gta agt | gct agg | ttc aat | cag tat | aag tac | aac caa | aat ttc | tct | 9387 |
| Val Ser | Ala Arg | Phe Asn | Gln Tyr | Lys Tyr | Asn Gln | Asn Phe | Ser | |
| 3090 | | | 3095 | | | 3100 | | |

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|---|-------|
| gct gga aac aac gag aac att atg gag gcc cat gta gga ata aat | 9432 |
| Ala Gly Asn Asn Glu Asn Ile Met Glu Ala His Val Gly Ile Asn | |
| 3105 3110 3115 | |
| gga gaa gca aat ctg gat ttc tta aac att cct tta aca att cct | 9477 |
| Gly Glu Ala Asn Leu Asp Phe Leu Asn Ile Pro Leu Thr Ile Pro | |
| 3120 3125 3130 | |
| gaa atg cgt cta cct tac aca ata atc aca act cct cca ctg aaa | 9522 |
| Glu Met Arg Leu Pro Tyr Thr Ile Ile Thr Thr Pro Pro Leu Lys | |
| 3135 3140 3145 | |
| gat ttc tct cta tgg gaa aaa aca ggc ttg aag gaa ttc ttg aaa | 9567 |
| Asp Phe Ser Leu Trp Glu Lys Thr Gly Leu Lys Glu Phe Leu Lys | |
| 3150 3155 3160 | |
| acg aca aag caa tca ttt gat tta agt gta aaa gct cag tat aag | 9612 |
| Thr Thr Lys Gln Ser Phe Asp Leu Ser Val Lys Ala Gln Tyr Lys | |
| 3165 3170 3175 | |
| aaa aac aaa cac agg cat tcc atc aca aat cct ttg gct gtg ctt | 9657 |
| Lys Asn Lys His Arg His Ser Ile Thr Asn Pro Leu Ala Val Leu | |
| 3180 3185 3190 | |
| tgt gag ttt atc agt cag agc atc aaa tcc ttt gac agg cat ttt | 9702 |
| Cys Glu Phe Ile Ser Gln Ser Ile Lys Ser Phe Asp Arg His Phe | |
| 3195 3200 3205 | |
| gaa aaa aac aga aac aat gca tta gat ttt gtc acc aaa tcc tat | 9747 |
| Glu Lys Asn Arg Asn Asn Ala Leu Asp Phe Val Thr Lys Ser Tyr | |
| 3210 3215 3220 | |
| aat gaa aca aaa att aag ttt gat aag tac aaa gct gaa aaa tct | 9792 |
| Asn Glu Thr Lys Ile Lys Phe Asp Lys Tyr Lys Ala Glu Lys Ser | |
| 3225 3230 3235 | |
| cac gac gag ctc ccc agg acc ttt caa att cct gga tac act gtt | 9837 |
| His Asp Glu Leu Pro Arg Thr Phe Gln Ile Pro Gly Tyr Thr Val | |
| 3240 3245 3250 | |
| cca gtt gtc aat gtt gaa gtg tct cca ttc acc ata gag atg tct | 9882 |
| Pro Val Val Asn Val Glu Val Ser Pro Phe Thr Ile Glu Met Ser | |
| 3255 3260 3265 | |
| gca ttc ggc tat gtg ttc cca aaa gca gtc agc atg cct agt ttc | 9927 |
| Ala Phe Gly Tyr Val Phe Pro Lys Ala Val Ser Met Pro Ser Phe | |
| 3270 3275 3280 | |
| tcc atc cta ggt tct gac gtc cgt gtg cct tca tac aca tta atc | 9972 |
| Ser Ile Leu Gly Ser Asp Val Arg Val Pro Ser Tyr Thr Leu Ile | |
| 3285 3290 3295 | |
| ctg cca tca tta gag ctg cca gtc ctt cat gtc cct aga aat ctc | 10017 |
| Leu Pro Ser Leu Glu Leu Pro Val Leu His Val Pro Arg Asn Leu | |
| 3300 3305 3310 | |

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|-----------------------------|---------------------------------|-------|
| aag agc aca cgg tct tca gtg | aag ctg cag ggc act tcc aaa att | 10692 |
| Lys Ser Thr Arg Ser Ser Val | Lys Leu Gln Gly Thr Ser Lys Ile | |
| 3525 | 3530 3535 | |
| gat gat atc tgg aac ctt gaa | gta aaa gaa aat ttt gct gga gaa | 10737 |
| Asp Asp Ile Trp Asn Leu Glu | Val Lys Glu Asn Phe Ala Gly Glu | |
| 3540 | 3545 3550 | |
| gcc aca ctc caa cgc ata tat | tcc ctc tgg gag cac agt acg aaa | 10782 |
| Ala Thr Leu Gln Arg Ile Tyr | Ser Leu Trp Glu His Ser Thr Lys | |
| 3555 | 3560 3565 | |
| aac cac tta cag cta gag ggc | ctc ttt ttc acc aac gga gaa cat | 10827 |
| Asn His Leu Gln Leu Glu Gly | Leu Phe Phe Thr Asn Gly Glu His | |
| 3570 | 3575 3580 | |
| aca agc aaa gcc acc ctg gaa | ctc tct cca tgg caa atg tca gct | 10872 |
| Thr Ser Lys Ala Thr Leu Glu | Leu Ser Pro Trp Gln Met Ser Ala | |
| 3585 | 3590 3595 | |
| ctt gtt cag gtc cat gca agt | cag ccc agt tcc ttc cat gat ttc | 10917 |
| Leu Val Gln Val His Ala Ser | Gln Pro Ser Ser Phe His Asp Phe | |
| 3600 | 3605 3610 | |
| cct gac ctt ggc cag gaa gtg | gcc ctg aat gct aac act aag aac | 10962 |
| Pro Asp Leu Gly Gln Glu Val | Ala Leu Asn Ala Asn Thr Lys Asn | |
| 3615 | 3620 3625 | |
| cag aag atc aga tgg aaa aat | gaa gtc cgg att cat tct ggg tct | 11007 |
| Gln Lys Ile Arg Trp Lys Asn | Glu Val Arg Ile His Ser Gly Ser | |
| 3630 | 3635 3640 | |
| ttc cag agc cag gtc gag ctt | tcc aat gac caa gaa aag gca cac | 11052 |
| Phe Gln Ser Gln Val Glu Leu | Ser Asn Asp Gln Glu Lys Ala His | |
| 3645 | 3650 3655 | |
| ctt gac att gca gga tcc tta | gaa gga cac cta agg ttc ctc aaa | 11097 |
| Leu Asp Ile Ala Gly Ser Leu | Glu Gly His Leu Arg Phe Leu Lys | |
| 3660 | 3665 3670 | |
| aat atc atc cta cca gtc tat | gac aag agc tta tgg gat ttc cta | 11142 |
| Asn Ile Ile Leu Pro Val Tyr | Asp Lys Ser Leu Trp Asp Phe Leu | |
| 3675 | 3680 3685 | |
| aag ctg gat gta acc acc agc | att ggt agg aga cag cat ctt cgt | 11187 |
| Lys Leu Asp Val Thr Thr Ser | Ile Gly Arg Arg Gln His Leu Arg | |
| 3690 | 3695 3700 | |
| gtt tca act gcc ttt gtg tac | acc aaa aac ccc aat ggc tat tca | 11232 |
| Val Ser Thr Ala Phe Val Tyr | Thr Lys Asn Pro Asn Gly Tyr Ser | |
| 3705 | 3710 3715 | |
| ttc tcc atc cct gta aaa gtt | ttg gct gat aaa ttc att att cct | 11277 |
| Phe Ser Ile Pro Val Lys Val | Leu Ala Asp Lys Phe Ile Ile Pro | |
| 3720 | 3725 3730 | |

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|---------|---------|---------|------|---------|---------|------|---------|-----|-------|
| ggg ctg | aaa cta | aat gat | cta | aat tca | gtt ctt | gtc | atg cct | acg | 11322 |
| Gly Leu | Lys Leu | Asn Asp | Leu | Asn Ser | Val Leu | Val | Met Pro | Thr | |
| 3735 | | | 3740 | | | 3745 | | | |
| ttc cat | gtc cca | ttt aca | gat | ctt cag | gtt cca | tcg | tgc aaa | ctt | 11367 |
| Phe His | Val Pro | Phe Thr | Asp | Leu Gln | Val Pro | Ser | Cys Lys | Leu | |
| 3750 | | | 3755 | | | 3760 | | | |
| gac ttc | aga gaa | ata caa | atc | tat aag | aag ctg | aga | act tca | tca | 11412 |
| Asp Phe | Arg Glu | Ile Gln | Ile | Tyr Lys | Lys Leu | Arg | Thr Ser | Ser | |
| 3765 | | | 3770 | | | 3775 | | | |
| ttt gcc | ctc aac | cta cca | aca | ctc ccc | gag gta | aaa | ttc cct | gaa | 11457 |
| Phe Ala | Leu Asn | Leu Pro | Thr | Leu Pro | Glu Val | Lys | Phe Pro | Glu | |
| 3780 | | | 3785 | | | 3790 | | | |
| gtt gat | gtg tta | aca aaa | tat | tct caa | cca gaa | gac | tcc ttg | att | 11502 |
| Val Asp | Val Leu | Thr Lys | Tyr | Ser Gln | Pro Glu | Asp | Ser Leu | Ile | |
| 3795 | | | 3800 | | | 3805 | | | |
| ccc ttt | ttt gag | ata acc | gtg | cct gaa | tct cag | tta | act gtg | tcc | 11547 |
| Pro Phe | Phe Glu | Ile Thr | Val | Pro Glu | Ser Gln | Leu | Thr Val | Ser | |
| 3810 | | | 3815 | | | 3820 | | | |
| cag ttc | acg ctt | cca aaa | agt | gtt tca | gat ggc | att | gct gct | ttg | 11592 |
| Gln Phe | Thr Leu | Pro Lys | Ser | Val Ser | Asp Gly | Ile | Ala Ala | Leu | |
| 3825 | | | 3830 | | | 3835 | | | |
| gat cta | aat gca | gta gcc | aac | aag atc | gca gac | ttt | gag ttg | ccc | 11637 |
| Asp Leu | Asn Ala | Val Ala | Asn | Lys Ile | Ala Asp | Phe | Glu Leu | Pro | |
| 3840 | | | 3845 | | | 3850 | | | |
| acc atc | atc gtg | cct gag | cag | acc att | gag att | ccc | tcc att | aag | 11682 |
| Thr Ile | Ile Val | Pro Glu | Gln | Thr Ile | Glu Ile | Pro | Ser Ile | Lys | |
| 3855 | | | 3860 | | | 3865 | | | |
| ttc tct | gta cct | gct gga | att | gcc att | cct tcc | ttt | caa gca | ctg | 11727 |
| Phe Ser | Val Pro | Ala Gly | Ile | Ala Ile | Pro Ser | Phe | Gln Ala | Leu | |
| 3870 | | | 3875 | | | 3880 | | | |
| act gca | cgc ttt | gag gta | gac | tct ccc | gtg tat | aat | gcc act | tg | 11772 |
| Thr Ala | Arg Phe | Glu Val | Asp | Ser Pro | Val Tyr | Asn | Ala Thr | Trp | |
| 3885 | | | 3890 | | | 3895 | | | |
| agt gcc | agt ttg | aaa aac | aaa | gca gat | tat gtt | gaa | aca gtc | ctg | 11817 |
| Ser Ala | Ser Leu | Lys Asn | Lys | Ala Asp | Tyr Val | Glu | Thr Val | Leu | |
| 3900 | | | 3905 | | | 3910 | | | |
| gat tcc | aca tgc | agc tca | acc | gta cag | ttc cta | gaa | tat gaa | ctt | 11862 |
| Asp Ser | Thr Cys | Ser Ser | Thr | Val Gln | Phe Leu | Glu | Tyr Glu | Leu | |
| 3915 | | | 3920 | | | 3925 | | | |
| aat gtt | ttg gga | aca cac | aaa | atc gaa | gat ggt | acg | tta gcc | tct | 11907 |
| Asn Val | Leu Gly | Thr His | Lys | Ile Glu | Asp Gly | Thr | Leu Ala | Ser | |
| 3930 | | | 3935 | | | 3940 | | | |

| | | | | |
|----------------------------|--|--|----------------------------|-------|
| aag act Lys Thr 3945 | aaa gga aca ttt gca Lys Gly Thr Phe 3950 | cac cgt gac ttc agt His Arg Asp Phe Ser 3955 | gca gaa tat Ala Glu Tyr | 11952 |
| gaa gaa Glu Glu 3960 | gat ggc aaa tat gaa Asp Gly Lys Tyr Glu 3965 | gga ctt cag gaa tgg Gly Leu Gln Glu Trp 3970 | gaa gga aaa Glu Gly Lys | 11997 |
| gcg cac Ala His 3975 | ctc aat atc aaa agc Leu Asn Ile Lys Ser 3980 | cca gcg ttc acc gat Pro Ala Phe Thr Asp 3985 | ctc cat ctg Leu His Leu | 12042 |
| cgç tac Arg Tyr 3990 | cag aaa gac aag aaa Gln Lys Asp Lys Lys 3995 | ggc atc tcc acc tca Gly Ile Ser Thr Ser 4000 | gca gcc tcc Ala Ala Ser | 12087 |
| cca gcc Pro Ala 4005 | gta ggc acc gtg ggc Val Gly Thr Val Gly 4010 | atg gat atg gat gaa Met Asp Met Asp Glu 4015 | gat gac gac Asp Asp Asp | 12132 |
| ttt tct Phe Ser 4020 | aaa tgg aac ttc tac Lys Trp Asn Phe Tyr 4025 | tac agc cct cag tcc Tyr Ser Pro Gln Ser 4030 | tct cca gat Ser Pro Asp | 12177 |
| aaa aaa Lys Lys 4035 | ctc acc ata ttc aaa Leu Thr Ile Phe Lys 4040 | act gag ttg agg gtc Thr Glu Leu Arg Val 4045 | cgç gaa tct Arg Glu Ser | 12222 |
| gat gag Asp Glu 4050 | gaa act cag atc aaa Glu Thr Gln Ile Lys 4055 | gtt aat tgg gaa gaa Val Asn Trp Glu Glu 4060 | gag gca gct Glu Ala Ala | 12267 |
| tct ggc Ser Gly 4065 | ttg cta acc tct ctg Leu Leu Thr Ser Leu 4070 | aaa gac aac gtg ccc Lys Asp Asn Val Pro 4075 | aag gcc aca Lys Ala Thr | 12312 |
| ggg gtc Gly Val 4080 | ctt tat gat tat gtc Leu Tyr Asp Tyr Val 4085 | aac aag tac cac tgg Asn Lys Tyr His Trp 4090 | gaa cac aca Glu His Thr | 12357 |
| ggg ctc Gly Leu 4095 | acc ctg aga gaa gtg Thr Leu Arg Glu Val 4100 | tct tca aag ctg aga Ser Ser Lys Leu Arg 4105 | aga aat ctg Arg Asn Leu | 12402 |
| cag gac Gln Asp 4110 | cat gct gag tgg gtt His Ala Glu Trp Val 4115 | tat caa ggg gcc att Tyr Gln Gly Ala Ile 4120 | agg gaa att Arg Glu Ile | 12447 |
| gat gat Asp Asp 4125 | atc gac gag agg ttc Ile Asp Glu Arg Phe 4130 | cag aaa gga gcc agt Gln Lys Gly Ala Ser 4135 | ggg acc act Gly Thr Thr | 12492 |
| ggg acc Gly Thr 4140 | tac caa gag tgg aag Tyr Gln Glu Trp Lys 4145 | gac aag gcc cag aat Asp Lys Ala Gln Asn 4150 | ctg tac cag Leu Tyr Gln | 12537 |

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|---------|---------|---------|---------|---------|---------|---------|-----|-------|
| gaa ctg | ttg act | cag gaa | ggc caa | gcc agt | ttc cag | gga ctc | aag | 12582 |
| Glu Leu | Leu Thr | Gln Glu | Gly Gln | Ala Ser | Phe Gln | Gly Leu | Lys | |
| 4155 | | | 4160 | | | 4165 | | |
| gat aac | gtg ttt | gat ggc | ttg gta | cga gtt | act caa | gaa ttc | cat | 12627 |
| Asp Asn | Val Phe | Asp Gly | Leu Val | Arg Val | Thr Gln | Glu Phe | His | |
| 4170 | | | 4175 | | | 4180 | | |
| atg aaa | gtc aag | cat ctg | att gac | tca ctc | att gat | ttt ctg | aac | 12672 |
| Met Lys | Val Lys | His Leu | Ile Asp | Ser Leu | Ile Asp | Phe Leu | Asn | |
| 4185 | | | 4190 | | | 4195 | | |
| ttc ccc | aga ttc | cag ttt | ccg ggg | aaa cct | ggg ata | tac act | agg | 12717 |
| Phe Pro | Arg Phe | Gln Phe | Pro Gly | Lys Pro | Gly Ile | Tyr Thr | Arg | |
| 4200 | | | 4205 | | | 4210 | | |
| gag gaa | ctt tgc | act atg | ttc ata | agg gag | gta ggg | acg gta | ctg | 12762 |
| Glu Glu | Leu Cys | Thr Met | Phe Ile | Arg Glu | Val Gly | Thr Val | Leu | |
| 4215 | | | 4220 | | | 4225 | | |
| tcc cag | gta tat | tcg aaa | gtc cat | aat ggt | tca gaa | ata ctg | ttt | 12807 |
| Ser Gln | Val Tyr | Ser Lys | Val His | Asn Gly | Ser Glu | Ile Leu | Phe | |
| 4230 | | | 4235 | | | 4240 | | |
| tcc tat | ttc caa | gac cta | gtg att | aca ctt | cct ttc | gag tta | agg | 12852 |
| Ser Tyr | Phe Gln | Asp Leu | Val Ile | Thr Leu | Pro Phe | Glu Leu | Arg | |
| 4245 | | | 4250 | | | 4255 | | |
| aaa cat | aaa cta | ata gat | gta atc | tcg atg | tat agg | gaa ctg | ttg | 12897 |
| Lys His | Lys Leu | Ile Asp | Val Ile | Ser Met | Tyr Arg | Glu Leu | Leu | |
| 4260 | | | 4265 | | | 4270 | | |
| aaa gat | tta tca | aaa gaa | gcc caa | gag gta | ttt aaa | gcc att | cag | 12942 |
| Lys Asp | Leu Ser | Lys Glu | Ala Gln | Glu Val | Phe Lys | Ala Ile | Gln | |
| 4275 | | | 4280 | | | 4285 | | |
| tct ctc | aag acc | aca gag | gtg cta | cgt aat | ctt cag | gac ctt | tta | 12987 |
| Ser Leu | Lys Thr | Thr Glu | Val Leu | Arg Asn | Leu Gln | Asp Leu | Leu | |
| 4290 | | | 4295 | | | 4300 | | |
| caa ttc | att ttc | caa cta | ata gaa | gat aac | att aaa | cag ctg | aaa | 13032 |
| Gln Phe | Ile Phe | Gln Leu | Ile Glu | Asp Asn | Ile Lys | Gln Leu | Lys | |
| 4305 | | | 4310 | | | 4315 | | |
| gag atg | aaa ttt | act tat | ctt att | aat tat | atc caa | gat gag | atc | 13077 |
| Glu Met | Lys Phe | Thr Tyr | Leu Ile | Asn Tyr | Ile Gln | Asp Glu | Ile | |
| 4320 | | | 4325 | | | 4330 | | |
| aac aca | atc ttc | aat gat | tat atc | cca tat | gtt ttt | aaa ttg | ttg | 13122 |
| Asn Thr | Ile Phe | Asn Asp | Tyr Ile | Pro Tyr | Val Phe | Lys Leu | Leu | |
| 4335 | | | 4340 | | | 4345 | | |
| aaa gaa | aac cta | tgc ctt | aat ctt | cat aag | ttc aat | gaa ttt | att | 13167 |
| Lys Glu | Asn Leu | Cys Leu | Asn Leu | His Lys | Phe Asn | Glu Phe | Ile | |
| 4350 | | | 4355 | | | 4360 | | |

| | | | |
|-----------------------------|-----------------------|-------------|-------|
| caa aac gag ctt cag gaa gct | tct caa gag tta cag | cag atc cat | 13212 |
| Gln Asn Glu Leu Gln Glu Ala | Ser Gln Glu Leu Gln | Gln Ile His | |
| 4365 | 4370 | 4375 | |
| caa tac att atg gcc ctt cgt | gaa gaa tat ttt gat | cca agt ata | 13257 |
| Gln Tyr Ile Met Ala Leu Arg | Glu Glu Tyr Phe Asp | Pro Ser Ile | |
| 4380 | 4385 | 4390 | |
| gtt ggc tgg aca gtg aaa tat | tat gaa ctt gaa gaa | aag ata gtc | 13302 |
| Val Gly Trp Thr Val Lys Tyr | Tyr Glu Leu Glu Glu | Lys Ile Val | |
| 4395 | 4400 | 4405 | |
| agt ctg atc aag aac ctg tta | gtt gct ctt aag gac | ttc cat tct | 13347 |
| Ser Leu Ile Lys Asn Leu Leu | Val Ala Leu Lys Asp | Phe His Ser | |
| 4410 | 4415 | 4420 | |
| gaa tat att gtc agt gcc tct | aac ttt act tcc caa | ctc tca agt | 13392 |
| Glu Tyr Ile Val Ser Ala Ser | Asn Phe Thr Ser Gln | Leu Ser Ser | |
| 4425 | 4430 | 4435 | |
| caa gtt gag caa ttt ctg cac | aga aat att cag gaa | tat ctt agc | 13437 |
| Gln Val Glu Gln Phe Leu His | Arg Asn Ile Gln Glu | Tyr Leu Ser | |
| 4440 | 4445 | 4450 | |
| atc ctt acc gat cca gat gga | aaa ggg aaa gag aag | att gca gag | 13482 |
| Ile Leu Thr Asp Pro Asp Gly | Lys Gly Lys Glu Lys | Ile Ala Glu | |
| 4455 | 4460 | 4465 | |
| ctt tct gcc act gct cag gaa | ata att aaa agc cag | gcc att gcg | 13527 |
| Leu Ser Ala Thr Ala Gln Glu | Ile Ile Lys Ser Gln | Ala Ile Ala | |
| 4470 | 4475 | 4480 | |
| acg aag aaa ata att tct gat | tac cac cag cag ttt | aga tat aaa | 13572 |
| Thr Lys Lys Ile Ile Ser Asp | Tyr His Gln Gln Phe | Arg Tyr Lys | |
| 4485 | 4490 | 4495 | |
| ctg caa gat ttt tca gac caa | ctc tct gat tac tat | gaa aaa ttt | 13617 |
| Leu Gln Asp Phe Ser Asp Gln | Leu Ser Asp Tyr Tyr | Glu Lys Phe | |
| 4500 | 4505 | 4510 | |
| att gct gaa tcc aaa aga ttg | att gac ctg tcc att | caa aac tac | 13662 |
| Ile Ala Glu Ser Lys Arg Leu | Ile Asp Leu Ser Ile | Gln Asn Tyr | |
| 4515 | 4520 | 4525 | |
| cac aca ttt ctg ata tac atc | acg gag tta ctg aaa | aag ctg caa | 13707 |
| His Thr Phe Leu Ile Tyr Ile | Thr Glu Leu Leu Lys | Lys Leu Gln | |
| 4530 | 4535 | 4540 | |
| tca acc aca gtc atg aac ccc | tac atg aag ctt gct | cca gga gaa | 13752 |
| Ser Thr Thr Val Met Asn Pro | Tyr Met Lys Leu Ala | Pro Gly Glu | |
| 4545 | 4550 | 4555 | |
| ctt act atc atc ctc taa | ttttttaaaa gaaatcttca | tttattcttc | 13800 |
| Leu Thr Ile Ile Leu | | | |
| 4560 | | | |

ttttccaatt gaactttcac atagcacaga aaaaattcaa aatgcctata ttgatcaaac 13860
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 caaataaatg gagtctttat tgtgtatcat 14070

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 <211> 4563
 <212> PRT
 <213> Homo sapiens

<400> 128

Met Asp Pro Pro Arg Pro Ala Leu Leu Ala Leu Leu Ala Leu Pro Ala
 1 5 10 15

Leu Leu Leu Leu Leu Leu Ala Gly Ala Arg Ala Glu Glu Glu Met Leu
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Glu Asn Val Ser Leu Val Cys Pro Lys Asp Ala Thr Arg Phe Lys His
 35 40 45

Leu Arg Lys Tyr Thr Tyr Asn Tyr Glu Ala Glu Ser Ser Ser Gly Val
 50 55 60

Pro Gly Thr Ala Asp Ser Arg Ser Ala Thr Arg Ile Asn Cys Lys Val
 65 70 75 80

Glu Leu Glu Val Pro Gln Leu Cys Ser Phe Ile Leu Lys Thr Ser Gln
 85 90 95

Cys Ile Leu Lys Glu Val Tyr Gly Phe Asn Pro Glu Gly Lys Ala Leu
 100 105 110

Leu Lys Lys Thr Lys Asn Ser Glu Glu Phe Ala Ala Ala Met Ser Arg
 115 120 125

Tyr Glu Leu Lys Leu Ala Ile Pro Glu Gly Lys Gln Val Phe Leu Tyr
 130 135 140

Pro Glu Lys Asp Glu Pro Thr Tyr Ile Leu Asn Ile Lys Arg Gly Ile
145 150 155 160

Ile Ser Ala Leu Leu Val Pro Pro Glu Thr Glu Glu Ala Lys Gln Val
165 170 175

Leu Phe Leu Asp Thr Val Tyr Gly Asn Cys Ser Thr His Phe Thr Val
180 185 190

Lys Thr Arg Lys Gly Asn Val Ala Thr Glu Ile Ser Thr Glu Arg Asp
195 200 205

Leu Gly Gln Cys Asp Arg Phe Lys Pro Ile Arg Thr Gly Ile Ser Pro
210 215 220

Leu Ala Leu Ile Lys Gly Met Thr Arg Pro Leu Ser Thr Leu Ile Ser
225 230 235 240

Ser Ser Gln Ser Cys Gln Tyr Thr Leu Asp Ala Lys Arg Lys His Val
245 250 255

Ala Glu Ala Ile Cys Lys Glu Gln His Leu Phe Leu Pro Phe Ser Tyr
260 265 270

Lys Asn Lys Tyr Gly Met Val Ala Gln Val Thr Gln Thr Leu Lys Leu
275 280 285

Glu Asp Thr Pro Lys Ile Asn Ser Arg Phe Phe Gly Glu Gly Thr Lys
290 295 300

Lys Met Gly Leu Ala Phe Glu Ser Thr Lys Ser Thr Ser Pro Pro Lys
305 310 315 320

Gln Ala Glu Ala Val Leu Lys Thr Val Gln Glu Leu Lys Lys Leu Thr
325 330 335

Ile Ser Glu Gln Asn Ile Gln Arg Ala Asn Leu Phe Asn Lys Leu Val
340 345 350

Thr Glu Leu Arg Gly Leu Ser Asp Glu Ala Val Thr Ser Leu Leu Pro
355 360 365

Val Ala Ser His Ile Ala Asn Ile Leu Asn Ser Glu Glu Leu Asp Ile
595 600 605

Gln Asp Leu Lys Lys Leu Val Lys Glu Val Leu Lys Glu Ser Gln Leu
610 615 620

Pro Thr Val Met Asp Phe Arg Lys Phe Ser Arg Asn Tyr Gln Leu Tyr
625 630 635 640

Lys Ser Val Ser Ile Pro Ser Leu Asp Pro Ala Ser Ala Lys Ile Glu
645 650 655

Gly Asn Leu Ile Phe Asp Pro Asn Asn Tyr Leu Pro Lys Glu Ser Met
660 665 670

Leu Lys Thr Thr Leu Thr Ala Phe Gly Phe Ala Ser Ala Asp Leu Ile
675 680 685

Glu Ile Gly Leu Glu Gly Lys Gly Phe Glu Pro Thr Leu Glu Ala Leu
690 695 700

Phe Gly Lys Gln Gly Phe Phe Pro Asp Ser Val Asn Lys Ala Leu Tyr
705 710 715 720

Trp Val Asn Gly Gln Val Pro Asp Gly Val Ser Lys Val Leu Val Asp
725 730 735

His Phe Gly Tyr Thr Lys Asp Asp Lys His Glu Gln Asp Met Val Asn
740 745 750

Gly Ile Met Leu Ser Val Glu Lys Leu Ile Lys Asp Leu Lys Ser Lys
755 760 765

Glu Val Pro Glu Ala Arg Ala Tyr Leu Arg Ile Leu Gly Glu Glu Leu
770 775 780

Gly Phe Ala Ser Leu His Asp Leu Gln Leu Leu Gly Lys Leu Leu Leu
785 790 795 800

Met Gly Ala Arg Thr Leu Gln Gly Ile Pro Gln Met Ile Gly Glu Val
805 810 815

Ile Arg Lys Gly Ser Lys Asn Asp Phe Phe Leu His Tyr Ile Phe Met
820 825 830

Glu Asn Ala Phe Glu Leu Pro Thr Gly Ala Gly Leu Gln Leu Gln Ile
835 840 845

Ser Ser Ser Gly Val Ile Ala Pro Gly Ala Lys Ala Gly Val Lys Leu
850 855 860

Glu Val Ala Asn Met Gln Ala Glu Leu Val Ala Lys Pro Ser Val Ser
865 870 875 880

Val Glu Phe Val Thr Asn Met Gly Ile Ile Ile Pro Asp Phe Ala Arg
885 890 895

Ser Gly Val Gln Met Asn Thr Asn Phe Phe His Glu Ser Gly Leu Glu
900 905 910

Ala His Val Ala Leu Lys Pro Gly Lys Leu Lys Phe Ile Ile Pro Ser
915 920 925

Pro Lys Arg Pro Val Lys Leu Leu Ser Gly Gly Asn Thr Leu His Leu
930 935 940

Val Ser Thr Thr Lys Thr Glu Val Ile Pro Pro Leu Ile Glu Asn Arg
945 950 955 960

Gln Ser Trp Ser Val Cys Lys Gln Val Phe Pro Gly Leu Asn Tyr Cys
965 970 975

Thr Ser Gly Ala Tyr Ser Asn Ala Ser Ser Thr Asp Ser Ala Ser Tyr
980 985 990

Tyr Pro Leu Thr Gly Asp Thr Arg Leu Glu Leu Glu Leu Arg Pro Thr
995 1000 1005

Gly Glu Ile Glu Gln Tyr Ser Val Ser Ala Thr Tyr Glu Leu Gln
1010 1015 1020

Arg Glu Asp Arg Ala Leu Val Asp Thr Leu Lys Phe Val Thr Gln
1025 1030 1035

| | | |
|-----------------------------|---------------------|-------------|
| Ala Glu Gly Ala Lys Gln Thr | Glu Ala Thr Met Thr | Phe Lys Tyr |
| 1040 | 1045 | 1050 |
| Asn Arg Gln Ser Met Thr Leu | Ser Ser Glu Val Gln | Ile Pro Asp |
| 1055 | 1060 | 1065 |
| Phe Asp Val Asp Leu Gly Thr | Ile Leu Arg Val Asn | Asp Glu Ser |
| 1070 | 1075 | 1080 |
| Thr Glu Gly Lys Thr Ser Tyr | Arg Leu Thr Leu Asp | Ile Gln Asn |
| 1085 | 1090 | 1095 |
| Lys Lys Ile Thr Glu Val Ala | Leu Met Gly His Leu | Ser Cys Asp |
| 1100 | 1105 | 1110 |
| Thr Lys Glu Glu Arg Lys Ile | Lys Gly Val Ile Ser | Ile Pro Arg |
| 1115 | 1120 | 1125 |
| Leu Gln Ala Glu Ala Arg Ser | Glu Ile Leu Ala His | Trp Ser Pro |
| 1130 | 1135 | 1140 |
| Ala Lys Leu Leu Leu Gln Met | Asp Ser Ser Ala Thr | Ala Tyr Gly |
| 1145 | 1150 | 1155 |
| Ser Thr Val Ser Lys Arg Val | Ala Trp His Tyr Asp | Glu Glu Lys |
| 1160 | 1165 | 1170 |
| Ile Glu Phe Glu Trp Asn Thr | Gly Thr Asn Val Asp | Thr Lys Lys |
| 1175 | 1180 | 1185 |
| Met Thr Ser Asn Phe Pro Val | Asp Leu Ser Asp Tyr | Pro Lys Ser |
| 1190 | 1195 | 1200 |
| Leu His Met Tyr Ala Asn Arg | Leu Leu Asp His Arg | Val Pro Gln |
| 1205 | 1210 | 1215 |
| Thr Asp Met Thr Phe Arg His | Val Gly Ser Lys Leu | Ile Val Ala |
| 1220 | 1225 | 1230 |
| Met Ser Ser Trp Leu Gln Lys | Ala Ser Gly Ser Leu | Pro Tyr Thr |
| 1235 | 1240 | 1245 |

| | | | | | |
|---------|-----------------|------|-----------------|------|-------------|
| Gln Thr | Leu Gln Asp His | Leu | Asn Ser Leu Lys | Glu | Phe Asn Leu |
| 1250 | | 1255 | | 1260 | |
| Gln Asn | Met Gly Leu Pro | Asp | Phe His Ile Pro | Glu | Asn Leu Phe |
| 1265 | | 1270 | | 1275 | |
| Leu Lys | Ser Asp Gly Arg | Val | Lys Tyr Thr Leu | Asn | Lys Asn Ser |
| 1280 | | 1285 | | 1290 | |
| Leu Lys | Ile Glu Ile Pro | Leu | Pro Phe Gly Gly | Lys | Ser Ser Arg |
| 1295 | | 1300 | | 1305 | |
| Asp Leu | Lys Met Leu Glu | Thr | Val Arg Thr Pro | Ala | Leu His Phe |
| 1310 | | 1315 | | 1320 | |
| Lys Ser | Val Gly Phe His | Leu | Pro Ser Arg Glu | Phe | Gln Val Pro |
| 1325 | | 1330 | | 1335 | |
| Thr Phe | Thr Ile Pro Lys | Leu | Tyr Gln Leu Gln | Val | Pro Leu Leu |
| 1340 | | 1345 | | 1350 | |
| Gly Val | Leu Asp Leu Ser | Thr | Asn Val Tyr Ser | Asn | Leu Tyr Asn |
| 1355 | | 1360 | | 1365 | |
| Trp Ser | Ala Ser Tyr Ser | Gly | Gly Asn Thr Ser | Thr | Asp His Phe |
| 1370 | | 1375 | | 1380 | |
| Ser Leu | Arg Ala Arg Tyr | His | Met Lys Ala Asp | Ser | Val Val Asp |
| 1385 | | 1390 | | 1395 | |
| Leu Leu | Ser Tyr Asn Val | Gln | Gly Ser Gly Glu | Thr | Thr Tyr Asp |
| 1400 | | 1405 | | 1410 | |
| His Lys | Asn Thr Phe Thr | Leu | Ser Cys Asp Gly | Ser | Leu Arg His |
| 1415 | | 1420 | | 1425 | |
| Lys Phe | Leu Asp Ser Asn | Ile | Lys Phe Ser His | Val | Glu Lys Leu |
| 1430 | | 1435 | | 1440 | |
| Gly Asn | Asn Pro Val Ser | Lys | Gly Leu Leu Ile | Phe | Asp Ala Ser |
| 1445 | | 1450 | | 1455 | |

| | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Ser | Ser | Trp | Gly | Pro | Gln | Met | Ser | Ala | Ser | Val | His | Leu | Asp | Ser |
| 1460 | | | | | | 1465 | | | | | 1470 | | | |
| Lys | Lys | Lys | Gln | His | Leu | Phe | Val | Lys | Glu | Val | Lys | Ile | Asp | Gly |
| 1475 | | | | | | 1480 | | | | | 1485 | | | |
| Gln | Phe | Arg | Val | Ser | Ser | Phe | Tyr | Ala | Lys | Gly | Thr | Tyr | Gly | Leu |
| 1490 | | | | | | 1495 | | | | | 1500 | | | |
| Ser | Cys | Gln | Arg | Asp | Pro | Asn | Thr | Gly | Arg | Leu | Asn | Gly | Glu | Ser |
| 1505 | | | | | | 1510 | | | | | 1515 | | | |
| Asn | Leu | Arg | Phe | Asn | Ser | Ser | Tyr | Leu | Gln | Gly | Thr | Asn | Gln | Ile |
| 1520 | | | | | | 1525 | | | | | 1530 | | | |
| Thr | Gly | Arg | Tyr | Glu | Asp | Gly | Thr | Leu | Ser | Leu | Thr | Ser | Thr | Ser |
| 1535 | | | | | | 1540 | | | | | 1545 | | | |
| Asp | Leu | Gln | Ser | Gly | Ile | Ile | Lys | Asn | Thr | Ala | Ser | Leu | Lys | Tyr |
| 1550 | | | | | | 1555 | | | | | 1560 | | | |
| Glu | Asn | Tyr | Glu | Leu | Thr | Leu | Lys | Ser | Asp | Thr | Asn | Gly | Lys | Tyr |
| 1565 | | | | | | 1570 | | | | | 1575 | | | |
| Lys | Asn | Phe | Ala | Thr | Ser | Asn | Lys | Met | Asp | Met | Thr | Phe | Ser | Lys |
| 1580 | | | | | | 1585 | | | | | 1590 | | | |
| Gln | Asn | Ala | Leu | Leu | Arg | Ser | Glu | Tyr | Gln | Ala | Asp | Tyr | Glu | Ser |
| 1595 | | | | | | 1600 | | | | | 1605 | | | |
| Leu | Arg | Phe | Phe | Ser | Leu | Leu | Ser | Gly | Ser | Leu | Asn | Ser | His | Gly |
| 1610 | | | | | | 1615 | | | | | 1620 | | | |
| Leu | Glu | Leu | Asn | Ala | Asp | Ile | Leu | Gly | Thr | Asp | Lys | Ile | Asn | Ser |
| 1625 | | | | | | 1630 | | | | | 1635 | | | |
| Gly | Ala | His | Lys | Ala | Thr | Leu | Arg | Ile | Gly | Gln | Asp | Gly | Ile | Ser |
| 1640 | | | | | | 1645 | | | | | 1650 | | | |
| Thr | Ser | Ala | Thr | Thr | Asn | Leu | Lys | Cys | Ser | Leu | Leu | Val | Leu | Glu |
| 1655 | | | | | | 1660 | | | | | 1665 | | | |

| | | |
|-----------------|-----------------------------|---|
| Ile Asp 1880 | Met Ser Thr Asn Tyr 1885 | Asn Ser Asp Ser Leu His Phe Ser 1890 |
| Asn Val 1895 | Phe Arg Ser Val Met 1900 | Ala Pro Phe Thr Met Thr Ile Asp 1905 |
| Ala His 1910 | Thr Asn Gly Asn Gly 1915 | Lys Leu Ala Leu Trp Gly Glu His 1920 |
| Thr Gly 1925 | Gln Leu Tyr Ser Lys 1930 | Phe Leu Leu Lys Ala Glu Pro Leu 1935 |
| Ala Phe 1940 | Thr Phe Ser His Asp 1945 | Tyr Lys Gly Ser Thr Ser His His 1950 |
| Leu Val 1955 | Ser Arg Lys Ser Ile 1960 | Ser Ala Ala Leu Glu His Lys Val 1965 |
| Ser Ala 1970 | Leu Leu Thr Pro Ala 1975 | Glu Gln Thr Gly Thr Trp Lys Leu 1980 |
| Lys Thr 1985 | Gln Phe Asn Asn Asn 1990 | Glu Tyr Ser Gln Asp Leu Asp Ala 1995 |
| Tyr Asn 2000 | Thr Lys Asp Lys Ile 2005 | Gly Val Glu Leu Thr Gly Arg Thr 2010 |
| Leu Ala 2015 | Asp Leu Thr Leu Leu 2020 | Asp Ser Pro Ile Lys Val Pro Leu 2025 |
| Leu Leu 2030 | Ser Glu Pro Ile Asn 2035 | Ile Ile Asp Ala Leu Glu Met Arg 2040 |
| Asp Ala 2045 | Val Glu Lys Pro Gln 2050 | Glu Phe Thr Ile Val Ala Phe Val 2055 |
| Lys Tyr 2060 | Asp Lys Asn Gln Asp 2065 | Val His Ser Ile Asn Leu Pro Phe 2070 |
| Phe Glu 2075 | Thr Leu Gln Glu Tyr 2080 | Phe Glu Arg Asn Arg Gln Thr Ile 2085 |

Ile Val Val Leu Glu Asn Val Gln Arg Asn Leu Lys His Ile Asn
2090 2095 2100

Ile Asp Gln Phe Val Arg Lys Tyr Arg Ala Ala Leu Gly Lys Leu
2105 2110 2115

Pro Gln Gln Ala Asn Asp Tyr Leu Asn Ser Phe Asn Trp Glu Arg
2120 2125 2130

Gln Val Ser His Ala Lys Glu Lys Leu Thr Ala Leu Thr Lys Lys
2135 2140 2145

Tyr Arg Ile Thr Glu Asn Asp Ile Gln Ile Ala Leu Asp Asp Ala
2150 2155 2160

Lys Ile Asn Phe Asn Glu Lys Leu Ser Gln Leu Gln Thr Tyr Met
2165 2170 2175

Ile Gln Phe Asp Gln Tyr Ile Lys Asp Ser Tyr Asp Leu His Asp
2180 2185 2190

Leu Lys Ile Ala Ile Ala Asn Ile Ile Asp Glu Ile Ile Glu Lys
2195 2200 2205

Leu Lys Ser Leu Asp Glu His Tyr His Ile Arg Val Asn Leu Val
2210 2215 2220

Lys Thr Ile His Asp Leu His Leu Phe Ile Glu Asn Ile Asp Phe
2225 2230 2235

Asn Lys Ser Gly Ser Ser Thr Ala Ser Trp Ile Gln Asn Val Asp
2240 2245 2250

Thr Lys Tyr Gln Ile Arg Ile Gln Ile Gln Glu Lys Leu Gln Gln
2255 2260 2265

Leu Lys Arg His Ile Gln Asn Ile Asp Ile Gln His Leu Ala Gly
2270 2275 2280

Lys Leu Lys Gln His Ile Glu Ala Ile Asp Val Arg Val Leu Leu
2285 2290 2295

| | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Asp | Gln | Leu | Gly | Thr | Thr | Ile | Ser | Phe | Glu | Arg | Ile | Asn | Asp | Val |
| 2300 | | | | | | 2305 | | | | | 2310 | | | |
| Leu | Glu | His | Val | Lys | His | Phe | Val | Ile | Asn | Leu | Ile | Gly | Asp | Phe |
| 2315 | | | | | | 2320 | | | | | 2325 | | | |
| Glu | Val | Ala | Glu | Lys | Ile | Asn | Ala | Phe | Arg | Ala | Lys | Val | His | Glu |
| 2330 | | | | | | 2335 | | | | | 2340 | | | |
| Leu | Ile | Glu | Arg | Tyr | Glu | Val | Asp | Gln | Gln | Ile | Gln | Val | Leu | Met |
| 2345 | | | | | | 2350 | | | | | 2355 | | | |
| Asp | Lys | Leu | Val | Glu | Leu | Ala | His | Gln | Tyr | Lys | Leu | Lys | Glu | Thr |
| 2360 | | | | | | 2365 | | | | | 2370 | | | |
| Ile | Gln | Lys | Leu | Ser | Asn | Val | Leu | Gln | Gln | Val | Lys | Ile | Lys | Asp |
| 2375 | | | | | | 2380 | | | | | 2385 | | | |
| Tyr | Phe | Glu | Lys | Leu | Val | Gly | Phe | Ile | Asp | Asp | Ala | Val | Lys | Lys |
| 2390 | | | | | | 2395 | | | | | 2400 | | | |
| Leu | Asn | Glu | Leu | Ser | Phe | Lys | Thr | Phe | Ile | Glu | Asp | Val | Asn | Lys |
| 2405 | | | | | | 2410 | | | | | 2415 | | | |
| Phe | Leu | Asp | Met | Leu | Ile | Lys | Lys | Leu | Lys | Ser | Phe | Asp | Tyr | His |
| 2420 | | | | | | 2425 | | | | | 2430 | | | |
| Gln | Phe | Val | Asp | Glu | Thr | Asn | Asp | Lys | Ile | Arg | Glu | Val | Thr | Gln |
| 2435 | | | | | | 2440 | | | | | 2445 | | | |
| Arg | Leu | Asn | Gly | Glu | Ile | Gln | Ala | Leu | Glu | Leu | Pro | Gln | Lys | Ala |
| 2450 | | | | | | 2455 | | | | | 2460 | | | |
| Glu | Ala | Leu | Lys | Leu | Phe | Leu | Glu | Glu | Thr | Lys | Ala | Thr | Val | Ala |
| 2465 | | | | | | 2470 | | | | | 2475 | | | |
| Val | Tyr | Leu | Glu | Ser | Leu | Gln | Asp | Thr | Lys | Ile | Thr | Leu | Ile | Ile |
| 2480 | | | | | | 2485 | | | | | 2490 | | | |
| Asn | Trp | Leu | Gln | Glu | Ala | Leu | Ser | Ser | Ala | Ser | Leu | Ala | His | Met |
| 2495 | | | | | | 2500 | | | | | 2505 | | | |

[illegible]

| | | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Pro | Glu | Phe | Ile | Ile | Pro | Thr | Leu | Asn | Leu | Asn | Asp | Phe | Gln | Val |
| | 2720 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Pro | Asp | Leu | His | Ile | Pro | Glu | Phe | Gln | Leu | Pro | His | Ile | Ser | His |
| | 2735 | | | | | 2740 | | | | | 2745 | | | |
| | | | | | | | | | | | | | | |
| Thr | Ile | Glu | Val | Pro | Thr | Phe | Gly | Lys | Leu | Tyr | Ser | Ile | Leu | Lys |
| | 2750 | | | | | 2755 | | | | | 2760 | | | |
| | | | | | | | | | | | | | | |
| Ile | Gln | Ser | Pro | Leu | Phe | Thr | Leu | Asp | Ala | Asn | Ala | Asp | Ile | Gly |
| | 2765 | | | | | 2770 | | | | | 2775 | | | |
| | | | | | | | | | | | | | | |
| Asn | Gly | Thr | Thr | Ser | Ala | Asn | Glu | Ala | Gly | Ile | Ala | Ala | Ser | Ile |
| | 2780 | | | | | 2785 | | | | | 2790 | | | |
| | | | | | | | | | | | | | | |
| Thr | Ala | Lys | Gly | Glu | Ser | Lys | Leu | Glu | Val | Leu | Asn | Phe | Asp | Phe |
| | 2795 | | | | | 2800 | | | | | 2805 | | | |
| | | | | | | | | | | | | | | |
| Gln | Ala | Asn | Ala | Gln | Leu | Ser | Asn | Pro | Lys | Ile | Asn | Pro | Leu | Ala |
| | 2810 | | | | | 2815 | | | | | 2820 | | | |
| | | | | | | | | | | | | | | |
| Leu | Lys | Glu | Ser | Val | Lys | Phe | Ser | Ser | Lys | Tyr | Leu | Arg | Thr | Glu |
| | 2825 | | | | | 2830 | | | | | 2835 | | | |
| | | | | | | | | | | | | | | |
| His | Gly | Ser | Glu | Met | Leu | Phe | Phe | Gly | Asn | Ala | Ile | Glu | Gly | Lys |
| | 2840 | | | | | 2845 | | | | | 2850 | | | |
| | | | | | | | | | | | | | | |
| Ser | Asn | Thr | Val | Ala | Ser | Leu | His | Thr | Glu | Lys | Asn | Thr | Leu | Glu |
| | 2855 | | | | | 2860 | | | | | 2865 | | | |
| | | | | | | | | | | | | | | |
| Leu | Ser | Asn | Gly | Val | Ile | Val | Lys | Ile | Asn | Asn | Gln | Leu | Thr | Leu |
| | 2870 | | | | | 2875 | | | | | 2880 | | | |
| | | | | | | | | | | | | | | |
| Asp | Ser | Asn | Thr | Lys | Tyr | Phe | His | Lys | Leu | Asn | Ile | Pro | Lys | Leu |
| | 2885 | | | | | 2890 | | | | | 2895 | | | |
| | | | | | | | | | | | | | | |
| Asp | Phe | Ser | Ser | Gln | Ala | Asp | Leu | Arg | Asn | Glu | Ile | Lys | Thr | Leu |
| | 2900 | | | | | 2905 | | | | | 2910 | | | |
| | | | | | | | | | | | | | | |
| Leu | Lys | Ala | Gly | His | Ile | Ala | Trp | Thr | Ser | Ser | Gly | Lys | Gly | Ser |
| | 2915 | | | | | 2920 | | | | | 2925 | | | |

| | | | |
|---------|---------------------|---------------------|-------------|
| Trp Lys | Trp Ala Cys Pro Arg | Phe Ser Asp Glu Gly | Thr His Glu |
| 2930 | 2935 | 2940 | |
| Ser Gln | Ile Ser Phe Thr Ile | Glu Gly Pro Leu Thr | Ser Phe Gly |
| 2945 | 2950 | 2955 | |
| Leu Ser | Asn Lys Ile Asn Ser | Lys His Leu Arg Val | Asn Gln Asn |
| 2960 | 2965 | 2970 | |
| Leu Val | Tyr Glu Ser Gly Ser | Leu Asn Phe Ser Lys | Leu Glu Ile |
| 2975 | 2980 | 2985 | |
| Gln Ser | Gln Val Asp Ser Gln | His Val Gly His Ser | Val Leu Thr |
| 2990 | 2995 | 3000 | |
| Ala Lys | Gly Met Ala Leu Phe | Gly Glu Gly Lys Ala | Glu Phe Thr |
| 3005 | 3010 | 3015 | |
| Gly Arg | His Asp Ala His Leu | Asn Gly Lys Val Ile | Gly Thr Leu |
| 3020 | 3025 | 3030 | |
| Lys Asn | Ser Leu Phe Phe Ser | Ala Gln Pro Phe Glu | Ile Thr Ala |
| 3035 | 3040 | 3045 | |
| Ser Thr | Asn Asn Glu Gly Asn | Leu Lys Val Arg Phe | Pro Leu Arg |
| 3050 | 3055 | 3060 | |
| Leu Thr | Gly Lys Ile Asp Phe | Leu Asn Asn Tyr Ala | Leu Phe Leu |
| 3065 | 3070 | 3075 | |
| Ser Pro | Ser Ala Gln Gln Ala | Ser Trp Gln Val Ser | Ala Arg Phe |
| 3080 | 3085 | 3090 | |
| Asn Gln | Tyr Lys Tyr Asn Gln | Asn Phe Ser Ala Gly | Asn Asn Glu |
| 3095 | 3100 | 3105 | |
| Asn Ile | Met Glu Ala His Val | Gly Ile Asn Gly Glu | Ala Asn Leu |
| 3110 | 3115 | 3120 | |
| Asp Phe | Leu Asn Ile Pro Leu | Thr Ile Pro Glu Met | Arg Leu Pro |
| 3125 | 3130 | 3135 | |

Tyr Thr Ile Ile Thr Thr Pro Pro Leu Lys Asp Phe Ser Leu Trp
3140 3145 3150

Glu Lys Thr Gly Leu Lys Glu Phe Leu Lys Thr Thr Lys Gln Ser
3155 3160 3165

Phe Asp Leu Ser Val Lys Ala Gln Tyr Lys Lys Asn Lys His Arg
3170 3175 3180

His Ser Ile Thr Asn Pro Leu Ala Val Leu Cys Glu Phe Ile Ser
3185 3190 3195

Gln Ser Ile Lys Ser Phe Asp Arg His Phe Glu Lys Asn Arg Asn
3200 3205 3210

Asn Ala Leu Asp Phe Val Thr Lys Ser Tyr Asn Glu Thr Lys Ile
3215 3220 3225

Lys Phe Asp Lys Tyr Lys Ala Glu Lys Ser His Asp Glu Leu Pro
3230 3235 3240

Arg Thr Phe Gln Ile Pro Gly Tyr Thr Val Pro Val Val Asn Val
3245 3250 3255

Glu Val Ser Pro Phe Thr Ile Glu Met Ser Ala Phe Gly Tyr Val
3260 3265 3270

Phe Pro Lys Ala Val Ser Met Pro Ser Phe Ser Ile Leu Gly Ser
3275 3280 3285

Asp Val Arg Val Pro Ser Tyr Thr Leu Ile Leu Pro Ser Leu Glu
3290 3295 3300

Leu Pro Val Leu His Val Pro Arg Asn Leu Lys Leu Ser Leu Pro
3305 3310 3315

Asp Phe Lys Glu Leu Cys Thr Ile Ser His Ile Phe Ile Pro Ala
3320 3325 3330

Met Gly Asn Ile Thr Tyr Asp Phe Ser Phe Lys Ser Ser Val Ile
3335 3340 3345

| | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Thr | Leu | Asn | Thr | Asn | Ala | Glu | Leu | Phe | Asn | Gln | Ser | Asp | Ile | Val |
| 3350 | | | | | | 3355 | | | | | 3360 | | | |
| Ala | His | Leu | Leu | Ser | Ser | Ser | Ser | Ser | Val | Ile | Asp | Ala | Leu | Gln |
| 3365 | | | | | | 3370 | | | | | 3375 | | | |
| Tyr | Lys | Leu | Glu | Gly | Thr | Thr | Arg | Leu | Thr | Arg | Lys | Arg | Gly | Leu |
| 3380 | | | | | | 3385 | | | | | 3390 | | | |
| Lys | Leu | Ala | Thr | Ala | Leu | Ser | Leu | Ser | Asn | Lys | Phe | Val | Glu | Gly |
| 3395 | | | | | | 3400 | | | | | 3405 | | | |
| Ser | His | Asn | Ser | Thr | Val | Ser | Leu | Thr | Thr | Lys | Asn | Met | Glu | Val |
| 3410 | | | | | | 3415 | | | | | 3420 | | | |
| Ser | Val | Ala | Thr | Thr | Thr | Lys | Ala | Gln | Ile | Pro | Ile | Leu | Arg | Met |
| 3425 | | | | | | 3430 | | | | | 3435 | | | |
| Asn | Phe | Lys | Gln | Glu | Leu | Asn | Gly | Asn | Thr | Lys | Ser | Lys | Pro | Thr |
| 3440 | | | | | | 3445 | | | | | 3450 | | | |
| Val | Ser | Ser | Ser | Met | Glu | Phe | Lys | Tyr | Asp | Phe | Asn | Ser | Ser | Met |
| 3455 | | | | | | 3460 | | | | | 3465 | | | |
| Leu | Tyr | Ser | Thr | Ala | Lys | Gly | Ala | Val | Asp | His | Lys | Leu | Ser | Leu |
| 3470 | | | | | | 3475 | | | | | 3480 | | | |
| Glu | Ser | Leu | Thr | Ser | Tyr | Phe | Ser | Ile | Glu | Ser | Ser | Thr | Lys | Gly |
| 3485 | | | | | | 3490 | | | | | 3495 | | | |
| Asp | Val | Lys | Gly | Ser | Val | Leu | Ser | Arg | Glu | Tyr | Ser | Gly | Thr | Ile |
| 3500 | | | | | | 3505 | | | | | 3510 | | | |
| Ala | Ser | Glu | Ala | Asn | Thr | Tyr | Leu | Asn | Ser | Lys | Ser | Thr | Arg | Ser |
| 3515 | | | | | | 3520 | | | | | 3525 | | | |
| Ser | Val | Lys | Leu | Gln | Gly | Thr | Ser | Lys | Ile | Asp | Asp | Ile | Trp | Asn |
| 3530 | | | | | | 3535 | | | | | 3540 | | | |
| Leu | Glu | Val | Lys | Glu | Asn | Phe | Ala | Gly | Glu | Ala | Thr | Leu | Gln | Arg |
| 3545 | | | | | | 3550 | | | | | 3555 | | | |

| | | |
|-----------------------------|---------------------|-------------|
| Ile Tyr Ser Leu Trp Glu His | Ser Thr Lys Asn His | Leu Gln Leu |
| 3560 | 3565 | 3570 |
| Glu Gly Leu Phe Phe Thr Asn | Gly Glu His Thr Ser | Lys Ala Thr |
| 3575 | 3580 | 3585 |
| Leu Glu Leu Ser Pro Trp Gln | Met Ser Ala Leu Val | Gln Val His |
| 3590 | 3595 | 3600 |
| Ala Ser Gln Pro Ser Ser Phe | His Asp Phe Pro Asp | Leu Gly Gln |
| 3605 | 3610 | 3615 |
| Glu Val Ala Leu Asn Ala Asn | Thr Lys Asn Gln Lys | Ile Arg Trp |
| 3620 | 3625 | 3630 |
| Lys Asn Glu Val Arg Ile His | Ser Gly Ser Phe Gln | Ser Gln Val |
| 3635 | 3640 | 3645 |
| Glu Leu Ser Asn Asp Gln Glu | Lys Ala His Leu Asp | Ile Ala Gly |
| 3650 | 3655 | 3660 |
| Ser Leu Glu Gly His Leu Arg | Phe Leu Lys Asn Ile | Ile Leu Pro |
| 3665 | 3670 | 3675 |
| Val Tyr Asp Lys Ser Leu Trp | Asp Phe Leu Lys Leu | Asp Val Thr |
| 3680 | 3685 | 3690 |
| Thr Ser Ile Gly Arg Arg Gln | His Leu Arg Val Ser | Thr Ala Phe |
| 3695 | 3700 | 3705 |
| Val Tyr Thr Lys Asn Pro Asn | Gly Tyr Ser Phe Ser | Ile Pro Val |
| 3710 | 3715 | 3720 |
| Lys Val Leu Ala Asp Lys Phe | Ile Ile Pro Gly Leu | Lys Leu Asn |
| 3725 | 3730 | 3735 |
| Asp Leu Asn Ser Val Leu Val | Met Pro Thr Phe His | Val Pro Phe |
| 3740 | 3745 | 3750 |
| Thr Asp Leu Gln Val Pro Ser | Cys Lys Leu Asp Phe | Arg Glu Ile |
| 3755 | 3760 | 3765 |

Gln Ile Tyr Lys Lys Leu Arg Thr Ser Ser Phe Ala Leu Asn Leu
 3770 3775 3780

Pro Thr Leu Pro Glu Val Lys Phe Pro Glu Val Asp Val Leu Thr
 3785 3790 3795

Lys Tyr Ser Gln Pro Glu Asp Ser Leu Ile Pro Phe Phe Glu Ile
 3800 3805 3810

Thr Val Pro Glu Ser Gln Leu Thr Val Ser Gln Phe Thr Leu Pro
 3815 3820 3825

Lys Ser Val Ser Asp Gly Ile Ala Ala Leu Asp Leu Asn Ala Val
 3830 3835 3840

Ala Asn Lys Ile Ala Asp Phe Glu Leu Pro Thr Ile Ile Val Pro
 3845 3850 3855

Glu Gln Thr Ile Glu Ile Pro Ser Ile Lys Phe Ser Val Pro Ala
 3860 3865 3870

Gly Ile Ala Ile Pro Ser Phe Gln Ala Leu Thr Ala Arg Phe Glu
 3875 3880 3885

Val Asp Ser Pro Val Tyr Asn Ala Thr Trp Ser Ala Ser Leu Lys
 3890 3895 3900

Asn Lys Ala Asp Tyr Val Glu Thr Val Leu Asp Ser Thr Cys Ser
 3905 3910 3915

Ser Thr Val Gln Phe Leu Glu Tyr Glu Leu Asn Val Leu Gly Thr
 3920 3925 3930

His Lys Ile Glu Asp Gly Thr Leu Ala Ser Lys Thr Lys Gly Thr
 3935 3940 3945

Phe Ala His Arg Asp Phe Ser Ala Glu Tyr Glu Glu Asp Gly Lys
 3950 3955 3960

Tyr Glu Gly Leu Gln Glu Trp Glu Gly Lys Ala His Leu Asn Ile
 3965 3970 3975

14-00000

Lys Ser Pro Ala Phe Thr Asp Leu His Leu Arg Tyr Gln Lys Asp
3980 3985 3990

Lys Lys Gly Ile Ser Thr Ser Ala Ala Ser Pro Ala Val Gly Thr
3995 4000 4005

Val Gly Met Asp Met Asp Glu Asp Asp Asp Phe Ser Lys Trp Asn
4010 4015 4020

Phe Tyr Tyr Ser Pro Gln Ser Ser Pro Asp Lys Lys Leu Thr Ile
4025 4030 4035

Phe Lys Thr Glu Leu Arg Val Arg Glu Ser Asp Glu Glu Thr Gln
4040 4045 4050

Ile Lys Val Asn Trp Glu Glu Glu Ala Ala Ser Gly Leu Leu Thr
4055 4060 4065

Ser Leu Lys Asp Asn Val Pro Lys Ala Thr Gly Val Leu Tyr Asp
4070 4075 4080

Tyr Val Asn Lys Tyr His Trp Glu His Thr Gly Leu Thr Leu Arg
4085 4090 4095

Glu Val Ser Ser Lys Leu Arg Arg Asn Leu Gln Asp His Ala Glu
4100 4105 4110

Trp Val Tyr Gln Gly Ala Ile Arg Glu Ile Asp Asp Ile Asp Glu
4115 4120 4125

Arg Phe Gln Lys Gly Ala Ser Gly Thr Thr Gly Thr Tyr Gln Glu
4130 4135 4140

Trp Lys Asp Lys Ala Gln Asn Leu Tyr Gln Glu Leu Leu Thr Gln
4145 4150 4155

Glu Gly Gln Ala Ser Phe Gln Gly Leu Lys Asp Asn Val Phe Asp
4160 4165 4170

Gly Leu Val Arg Val Thr Gln Glu Phe His Met Lys Val Lys His
4175 4180 4185

Lys Tyr Tyr Glu Leu Glu Glu Lys Ile Val Ser Leu Ile Lys Asn
 4400 4405 4410

Leu Leu Val Ala Leu Lys Asp Phe His Ser Glu Tyr Ile Val Ser
 4415 4420 4425

Ala Ser Asn Phe Thr Ser Gln Leu Ser Ser Gln Val Glu Gln Phe
 4430 4435 4440

Leu His Arg Asn Ile Gln Glu Tyr Leu Ser Ile Leu Thr Asp Pro
 4445 4450 4455

Asp Gly Lys Gly Lys Glu Lys Ile Ala Glu Leu Ser Ala Thr Ala
 4460 4465 4470

Gln Glu Ile Ile Lys Ser Gln Ala Ile Ala Thr Lys Lys Ile Ile
 4475 4480 4485

Ser Asp Tyr His Gln Gln Phe Arg Tyr Lys Leu Gln Asp Phe Ser
 4490 4495 4500

Asp Gln Leu Ser Asp Tyr Tyr Glu Lys Phe Ile Ala Glu Ser Lys
 4505 4510 4515

Arg Leu Ile Asp Leu Ser Ile Gln Asn Tyr His Thr Phe Leu Ile
 4520 4525 4530

Tyr Ile Thr Glu Leu Leu Lys Lys Leu Gln Ser Thr Thr Val Met
 4535 4540 4545

Asn Pro Tyr Met Lys Leu Ala Pro Gly Glu Leu Thr Ile Ile Leu
 4550 4555 4560

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| cgcagcggag | gtgaaggacg | tccttcccca | ggagccgact | ggccaatcac | aggcaggaag | 60 |
| atg aag gtt ctg tgg gct gcg ttg ctg gtc aca ttc ctg gca gga tgc | 108 | | | | | |
| Met Lys Val Leu Trp Ala Ala Leu Leu Val Thr Phe Leu Ala Gly Cys | | | | | | |
| 1 5 10 15 | | | | | | |
| cag gcc aag gtg gag caa gcg gtg gag aca gag ccg gag ccc gag ctg | 156 | | | | | |
| Gln Ala Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu | | | | | | |
| 20 25 30 | | | | | | |
| cgc cag cag acc gag tgg cag agc ggc cag cgc tgg gaa ctg gca ctg | 204 | | | | | |
| Arg Gln Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu | | | | | | |
| 35 40 45 | | | | | | |
| ggc cgc ttt tgg gat tac ctg cgc tgg gtg cag aca ctg tct gag cag | 252 | | | | | |
| Gly Arg Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln | | | | | | |
| 50 55 60 | | | | | | |
| gtg cag gag gag ctg ctc agc tcc cag gtc acc cag gaa ctg agg gcg | 300 | | | | | |
| Val Gln Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala | | | | | | |
| 65 70 75 80 | | | | | | |
| ctg atg gac gag acc atg aag gag ttg aag gcc tac aaa tcg gaa ctg | 348 | | | | | |
| Leu Met Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu | | | | | | |
| 85 90 95 | | | | | | |
| gag gaa caa ctg acc ccg gtg gcg gag gag acg cgg gca cgg ctg tcc | 396 | | | | | |
| Glu Glu Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser | | | | | | |
| 100 105 110 | | | | | | |
| aag gag ctg cag gcg gcg cag gcc cgg ctg ggc gcg gac atg gag gac | 444 | | | | | |
| Lys Glu Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp | | | | | | |
| 115 120 125 | | | | | | |
| gtg tgc ggc cgc ctg gtg cag tac cgc ggc gag gtg cag gcc atg ctc | 492 | | | | | |
| Val Cys Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu | | | | | | |
| 130 135 140 | | | | | | |
| ggc cag agc acc gag gag ctg cgg gtg cgc ctc gcc tcc cac ctg cgc | 540 | | | | | |
| Gly Gln Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg | | | | | | |
| 145 150 155 160 | | | | | | |
| aag ctg cgt aag cgg ctc ctc cgc gat gcc gat gac ctg cag aag cgc | 588 | | | | | |
| Lys Leu Arg Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg | | | | | | |
| 165 170 175 | | | | | | |
| ctg gca gtg tac cag gcc ggg gcc cgc gag ggc gcc gag cgc ggc ctc | 636 | | | | | |
| Leu Ala Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu | | | | | | |
| 180 185 190 | | | | | | |
| agc gcc atc cgc gag cgc ctg ggg ccc ctg gtg gaa cag ggc cgc gtg | 684 | | | | | |
| Ser Ala Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val | | | | | | |
| 195 200 205 | | | | | | |

cgg gcc gcc act gtg ggc tcc ctg gcc ggc cag ccg cta cag gag cgg 732
 Arg Ala Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg
 210 215 220

gcc cag gcc tgg ggc gag cgg ctg cgc gcg cgg atg gag gag atg ggc 780
 Ala Gln Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly
 225 230 235 240

agc cgg acc cgc gac cgc ctg gac gag gtg aag gag cag gtg gcg gag 828
 Ser Arg Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu
 245 250 255

gtg cgc gcc aag ctg gag gag cag gcc cag cag ata cgc ctg cag gcc 876
 Val Arg Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala
 260 265 270

gag gcc ttc cag gcc cgc ctc aag agc tgg ttc gag ccc ctg gtg gaa 924
 Glu Ala Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu
 275 280 285

gac atg cag cgc cag tgg gcc ggc ctg gtg gag aag gtg cag gct gcc 972
 Asp Met Gln Arg Gln Trp Ala Gly Leu Val Glu Lys Val Gln Ala Ala
 290 295 300

gtg ggc acc agc gcc gcc cct gtg ccc agc gac aat cac tga 1014
 Val Gly Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His
 305 310 315

acgccgaagc ctgcagccat gcgacccac gccaccccggt gcctcctgcc tccgcgcagc 1074

ctgcagcggg agaccctgtc cccgccccag ccgtcctcct ggggtggacc ctagtttaat 1134

aaagattcac caagtttcac gc 1156

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<212> PRT

<213> Homo sapiens

<400> 130

Met Lys Val Leu Trp Ala Ala Leu Leu Val Thr Phe Leu Ala Gly Cys
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Gln Ala Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu
 20 25 30

Arg Gln Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu
 35 40 45

Gly Arg Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln
50 55 60

Val Gln Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala
65 70 75 80

Leu Met Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu
85 90 95

Glu Glu Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser
100 105 110

Lys Glu Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp
115 120 125

Val Cys Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu
130 135 140

Gly Gln Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg
145 150 155 160

Lys Leu Arg Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg
165 170 175

Leu Ala Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu
180 185 190

Ser Ala Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val
195 200 205

Arg Ala Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg
210 215 220

Ala Gln Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly
225 230 235 240

Ser Arg Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu
245 250 255

Val Arg Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala
260 265 270

ccg gcc ttg ttt tat tca aag aca gag aag acc aaa gca ttg cct gcc 431
 Pro Ala Leu Phe Tyr Ser Lys Thr Glu Lys Thr Lys Ala Leu Pro Ala
 130 135 140

aga gct ttg ttt tat ata ttt att cat ctg gga ggc aga aca ggc ttc 479
 Arg Ala Leu Phe Tyr Ile Phe Ile His Leu Gly Gly Arg Thr Gly Phe
 145 150 155

gga cag tgc cca tgc aat ggc ttg ggt tgg gat ttt ggt ttc ttc ctt 527
 Gly Gln Cys Pro Cys Asn Gly Leu Gly Trp Asp Phe Gly Phe Phe Leu
 160 165 170 175

tcc tgt gaa gga taa 542
 Ser Cys Glu Gly

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<400> 132

Leu Gly Asp Val Ala Gly Arg Gly Asn Glu Lys Lys Pro Ser Ser Val
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Arg Ala Leu Ser Ile Val Leu Pro Ile Ala Thr Glu Leu Gly Leu Trp
 20 25 30

Ser Arg Gly Gln Leu Cys Asp Arg Ala Cys Leu Ser Leu Arg Cys Ser
 35 40 45

Ser Ser Ser Phe Ala Trp Gly Ser Ser Phe Tyr Gly Arg Thr Gly Gly
 50 55 60

Leu Arg Thr Ser Thr Ala Ser Thr Leu Thr Thr Pro Ser Ile Arg Arg
 65 70 75 80

Pro Gln Arg Met Arg Ser Thr Phe Ala Thr Thr Arg Thr Ala Thr Ala
 85 90 95

Thr Pro Arg Asp Arg Trp Ser Val Trp Arg Met Thr Trp Arg Glu His
 100 105 110

Leu Pro Gly Val Pro Pro Leu Pro Arg Thr Leu Pro Glu Thr Ser Pro
 115 120 125

Ala Leu Phe Tyr Ser Lys Thr Glu Lys Thr Lys Ala Leu Pro Ala Arg
130 135 140

Ala Leu Phe Tyr Ile Phe Ile His Leu Gly Gly Arg Thr Gly Phe Gly
145 150 155 160

Gln Cys Pro Cys Asn Gly Leu Gly Trp Asp Phe Gly Phe Phe Leu Ser
165 170 175

Cys Glu Gly

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Met Gly Leu Gly Leu Leu Leu Pro Leu
1 5

ctg ctg ctc tgg act cgg ggg act cag ggg tcc gag ctg gac ccc aaa 101
Leu Leu Leu Trp Thr Arg Gly Thr Gln Gly Ser Glu Leu Asp Pro Lys
10 15 20 25

ggg cag cac gtc tgt gtg gcc agc agc ccc tct gct gag ctg cag tgc 149
Gly Gln His Val Cys Val Ala Ser Ser Pro Ser Ala Glu Leu Gln Cys
30 35 40

tgc gca ggc tgg agg cag aag gat caa gaa tgc acc atc ccc atc tgt 197
Cys Ala Gly Trp Arg Gln Lys Asp Gln Glu Cys Thr Ile Pro Ile Cys
45 50 55

gag ggg ccg gac gcc tgc cag aaa gac gag gtg tgt gtg aag ccg ggc 245
Glu Gly Pro Asp Ala Cys Gln Lys Asp Glu Val Cys Val Lys Pro Gly
60 65 70

ctc tgt cga tgc aag cct gga ttc ttt ggg gcc cac tgc agc tcc cgc 293
Leu Cys Arg Cys Lys Pro Gly Phe Phe Gly Ala His Cys Ser Ser Arg
75 80 85

tgc ccg ggc cag tac tgg ggc ccc gac tgc cgt gag agc tgc ccc tgc 341
Cys Pro Gly Gln Tyr Trp Gly Pro Asp Cys Arg Glu Ser Cys Pro Cys
90 95 100 105

| | |
|---|------|
| cac ccg cac ggc cag tgc gag cca gcc acg ggc gcg tgc cag tgc cag | 389 |
| His Pro His Gly Gln Cys Glu Pro Ala Thr Gly Ala Cys Gln Cys Gln | |
| 110 115 120 | |
| gcc gac cgc tgg gga gcc cgc tgc gag ttc ccg tgc gcc tgc ggc ccc | 437 |
| Ala Asp Arg Trp Gly Ala Arg Cys Glu Phe Pro Cys Ala Cys Gly Pro | |
| 125 130 135 | |
| cac ggg cgc tgc gac ccc gcg acc ggc gtg tgc cac tgc gaa ccc ggc | 485 |
| His Gly Arg Cys Asp Pro Ala Thr Gly Val Cys His Cys Glu Pro Gly | |
| 140 145 150 | |
| tgg tgg tcg tcc acg tgc cgc cgc ccg tgc cag tgc aac acc gcg gcg | 533 |
| Trp Trp Ser Ser Thr Cys Arg Arg Pro Cys Gln Cys Asn Thr Ala Ala | |
| 155 160 165 | |
| gcg cgc tgc gag cag gcc acg ggc gcc tgc gtg tgc aag ccg ggc tgg | 581 |
| Ala Arg Cys Glu Gln Ala Thr Gly Ala Cys Val Cys Lys Pro Gly Trp | |
| 170 175 180 185 | |
| tgg ggg cgc cgc tgc agc ttc cgc tgc aac tgc cac ggc tcc ccg tgc | 629 |
| Trp Gly Arg Arg Cys Ser Phe Arg Cys Asn Cys His Gly Ser Pro Cys | |
| 190 195 200 | |
| gag cag gac tcc ggc cgc tgc gcc tgc ccg ccg ggc tgg tgg ggt ccc | 677 |
| Glu Gln Asp Ser Gly Arg Cys Ala Cys Arg Pro Gly Trp Trp Gly Pro | |
| 205 210 215 | |
| gaa tgc cag cag cag tgc gag tgt gtg ccg ggc cgc tgc agc gcc gcc | 725 |
| Glu Cys Gln Gln Gln Cys Glu Cys Val Arg Gly Arg Cys Ser Ala Ala | |
| 220 225 230 | |
| tcc ggc gag tgc acc tgc ccg ccc ggc ttc cgc gga gcg cgc tgc gag | 773 |
| Ser Gly Glu Cys Thr Cys Pro Pro Gly Phe Arg Gly Ala Arg Cys Glu | |
| 235 240 245 | |
| ctg ccc tgc ccg gca ggc agc cac ggg gtg cag tgc gca cac agc tgt | 821 |
| Leu Pro Cys Pro Ala Gly Ser His Gly Val Gln Cys Ala His Ser Cys | |
| 250 255 260 265 | |
| ggc cgc tgc aaa cac aat gag ccg tgc tct cca gac aca ggc agc tgt | 869 |
| Gly Arg Cys Lys His Asn Glu Pro Cys Ser Pro Asp Thr Gly Ser Cys | |
| 270 275 280 | |
| gag tcc tgc gag ccg ggc tgg aac ggg acc cag tgc cag cag ccc tgc | 917 |
| Glu Ser Cys Glu Pro Gly Trp Asn Gly Thr Gln Cys Gln Gln Pro Cys | |
| 285 290 295 | |
| ctg cct ggc acc ttt ggc gag agc tgc gaa cag cag tgc cct cac tgc | 965 |
| Leu Pro Gly Thr Phe Gly Glu Ser Cys Glu Gln Gln Cys Pro His Cys | |
| 300 305 310 | |
| cga cat ggg gag gcc tgt gag cca gat act ggc cac tgt cag cgc tgt | 1013 |
| Arg His Gly Glu Ala Cys Glu Pro Asp Thr Gly His Cys Gln Arg Cys | |
| 315 320 325 | |

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| gac cct ggc tgg ctg ggg ccc agg tgt gaa gac ccc tgc ccc act ggt | 1061 |
| Asp Pro Gly Trp Leu Gly Pro Arg Cys Glu Asp Pro Cys Pro Thr Gly | |
| 330 335 340 345 | |
| acc ttt ggg gaa gac tgt ggc tct acc tgc ccc acc tgt gtt cag ggg | 1109 |
| Thr Phe Gly Glu Asp Cys Gly Ser Thr Cys Pro Thr Cys Val Gln Gly | |
| 350 355 360 | |
| tcc tgt gat act gtg aca ggg gac tgt gtc tgc agt gcc ggc tac tgg | 1157 |
| Ser Cys Asp Thr Val Thr Gly Asp Cys Val Cys Ser Ala Gly Tyr Trp | |
| 365 370 375 | |
| ggg ccc agc tgc aac gcc tcc tgc cca gcc ggt ttc cat gga aac aac | 1205 |
| Gly Pro Ser Cys Asn Ala Ser Cys Pro Ala Gly Phe His Gly Asn Asn | |
| 380 385 390 | |
| tgc tca gtt cct tgt gaa tgc cca gag gga ctc tgc cac cct gtc tct | 1253 |
| Cys Ser Val Pro Cys Glu Cys Pro Glu Gly Leu Cys His Pro Val Ser | |
| 395 400 405 | |
| ggg tcc tgc cag cca ggc tct ggc agt cgg gac act gcc ctc atc gtg | 1301 |
| Gly Ser Cys Gln Pro Gly Ser Gly Ser Arg Asp Thr Ala Leu Ile Val | |
| 410 415 420 425 | |
| ggc agc ctt gtg cct ctg ctg ctg ctc ttc ctg ggt ctt gcc tgc tgt | 1349 |
| Gly Ser Leu Val Pro Leu Leu Leu Leu Phe Leu Gly Leu Ala Cys Cys | |
| 430 435 440 | |
| gcc tgc tgc tgc tgg gcc ccc cga tca gac ctc aag gac agg cca gcg | 1397 |
| Ala Cys Cys Cys Trp Ala Pro Arg Ser Asp Leu Lys Asp Arg Pro Ala | |
| 445 450 455 | |
| aga gat gga gct acc gtg tcc agg atg aag ctg cag gtc tgg ggg aca | 1445 |
| Arg Asp Gly Ala Thr Val Ser Arg Met Lys Leu Gln Val Trp Gly Thr | |
| 460 465 470 | |
| ctg acc agc ttg ggc tcc acg ctg ccc tgc cgt tcc ctc agc tcc cac | 1493 |
| Leu Thr Ser Leu Gly Ser Thr Leu Pro Cys Arg Ser Leu Ser Ser His | |
| 475 480 485 | |
| aag cta ccc tgg gtg aca gtc tca cat cac gac ccg gag gtc ccc ttc | 1541 |
| Lys Leu Pro Trp Val Thr Val Ser His His Asp Pro Glu Val Pro Phe | |
| 490 495 500 505 | |
| aac cac agc ttc atc gag ccg ccc tct gcc ggc tgg gcc act gat gac | 1589 |
| Asn His Ser Phe Ile Glu Pro Pro Ser Ala Gly Trp Ala Thr Asp Asp | |
| 510 515 520 | |
| tcc ttc tca tcc gat cct gag tct gga gag gca gat gag gtt cct gcc | 1637 |
| Ser Phe Ser Ser Asp Pro Glu Ser Gly Glu Ala Asp Glu Val Pro Ala | |
| 525 530 535 | |
| tac tgt gtg cca ccc caa gaa ggg atg gtc cct gtg gcc cag gca ggg | 1685 |
| Tyr Cys Val Pro Pro Gln Glu Gly Met Val Pro Val Ala Gln Ala Gly | |
| 540 545 550 | |

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|---|------|
| tcg tca gag gcc agc ctg gct gca ggt gct ttc ccg ccc cct gag gac | 1733 |
| Ser Ser Glu Ala Ser Leu Ala Ala Gly Ala Phe Pro Pro Pro Glu Asp | |
| 555 560 565 | |
| gcc tcc acg cca ttc gcc atc ccg cgc acc tcc agc cta gct cgg gcc | 1781 |
| Ala Ser Thr Pro Phe Ala Ile Pro Arg Thr Ser Ser Leu Ala Arg Ala | |
| 570 575 580 585 | |
| aag cgg cca tcg gtc tcc ttc gcg gaa ggt acc aag ttt gca cca cag | 1829 |
| Lys Arg Pro Ser Val Ser Phe Ala Glu Gly Thr Lys Phe Ala Pro Gln | |
| 590 595 600 | |
| agt cgc cga agc tca ggg gag ctc tcc agc ccg ctc cga aag ccc aag | 1877 |
| Ser Arg Arg Ser Ser Gly Glu Leu Ser Ser Pro Leu Arg Lys Pro Lys | |
| 605 610 615 | |
| agg ctc tcc cgg ggg gcg cag tcg ggt cct gag ggc cgg gaa gcc gaa | 1925 |
| Arg Leu Ser Arg Gly Ala Gln Ser Gly Pro Glu Gly Arg Glu Ala Glu | |
| 620 625 630 | |
| gag tcc aca ggc cca gac gaa gca gaa gcc ccc gag tcc ttt ccg gcg | 1973 |
| Glu Ser Thr Gly Pro Asp Glu Ala Glu Ala Pro Glu Ser Phe Pro Ala | |
| 635 640 645 | |
| gct gcc agt ccc ggg gat tca gcc act ggc cac ccg ccg ccc cca ctt | 2021 |
| Ala Ala Ser Pro Gly Asp Ser Ala Thr Gly His Arg Arg Pro Pro Leu | |
| 650 655 660 665 | |
| ggt agc cgg aca gtg gct gag cac gtg gaa gcc att gag ggc agc gtc | 2069 |
| Gly Ser Arg Thr Val Ala Glu His Val Glu Ala Ile Glu Gly Ser Val | |
| 670 675 680 | |
| cag gag agc tcg ggc cct gtg acc acg atc tac atg ctg gca ggg aag | 2117 |
| Gln Glu Ser Ser Gly Pro Val Thr Thr Ile Tyr Met Leu Ala Gly Lys | |
| 685 690 695 | |
| ccc cgc gga tcc gaa ggc cct gtc cgc tct gtc ttc cgc cat ttt ggt | 2165 |
| Pro Arg Gly Ser Glu Gly Pro Val Arg Ser Val Phe Arg His Phe Gly | |
| 700 705 710 | |
| agc ttc cag aaa ggc cag gcg gaa gcc aag gtc aag agg gcc atc cct | 2213 |
| Ser Phe Gln Lys Gly Gln Ala Glu Ala Lys Val Lys Arg Ala Ile Pro | |
| 715 720 725 | |
| aag cct ccg cgc cag gcc ctg aat ccg aaa aag ggc agc cct ggc ctt | 2261 |
| Lys Pro Pro Arg Gln Ala Leu Asn Arg Lys Lys Gly Ser Pro Gly Leu | |
| 730 735 740 745 | |
| gcc tct ggc tct gtc ggc cag agc ccc aac tca gcc cca aaa gct ggg | 2309 |
| Ala Ser Gly Ser Val Gly Gln Ser Pro Asn Ser Ala Pro Lys Ala Gly | |
| 750 755 760 | |
| ctt cct ggg gcc aca ggg cct atg gca gtc aga cca gag gaa gcg gtc | 2357 |
| Leu Pro Gly Ala Thr Gly Pro Met Ala Val Arg Pro Glu Glu Ala Val | |
| 765 770 775 | |

cgg ggg ctg ggg gct ggc acc gag agt tca agg aga gcc cag gag cca 2405
 Arg Gly Leu Gly Ala Gly Thr Glu Ser Ser Arg Arg Ala Gln Glu Pro
 780 785 790

gtc tct ggc tgt ggc tcc cca gaa cag gat ccc cag aag cag gct gaa 2453
 Val Ser Gly Cys Gly Ser Pro Glu Gln Asp Pro Gln Lys Gln Ala Glu
 795 800 805

gag gaa agg cag gag gaa cct gag tat gag aat gtt gta ccc atc tcc 2501
 Glu Glu Arg Gln Glu Glu Pro Glu Tyr Glu Asn Val Val Pro Ile Ser
 810 815 820 825

agg cca cca gaa ccc tga tgaccttgaa tttggggagt ggggagagtg 2549
 Arg Pro Pro Glu Pro
 830

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$\frac{1}{2} \left(\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}} \right) = \frac{1}{2} \left(\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}} \right)$

Arg Cys Asn Cys His Gly Ser Pro Cys Glu Gln Asp Ser Gly Arg Cys
195 200 205

(The following information was obtained from the FBI files maintained at the New York City Office.)

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Ala Thr Gly His Arg Arg Pro Pro Leu Gly Ser Arg Thr Val Ala Glu
660 665 670

His Val Glu Ala Ile Glu Gly Ser Val Gln Glu Ser Ser Gly Pro Val
675 680 685

Thr Thr Ile Tyr Met Leu Ala Gly Lys Pro Arg Gly Ser Glu Gly Pro
690 695 700

Val Arg Ser Val Phe Arg His Phe Gly Ser Phe Gln Lys Gly Gln Ala
705 710 715 720

Glu Ala Lys Val Lys Arg Ala Ile Pro Lys Pro Pro Arg Gln Ala Leu
725 730 735

Asn Arg Lys Lys Gly Ser Pro Gly Leu Ala Ser Gly Ser Val Gly Gln
740 745 750

Ser Pro Asn Ser Ala Pro Lys Ala Gly Leu Pro Gly Ala Thr Gly Pro
755 760 765

Met Ala Val Arg Pro Glu Glu Ala Val Arg Gly Leu Gly Ala Gly Thr
770 775 780

Glu Ser Ser Arg Arg Ala Gln Glu Pro Val Ser Gly Cys Gly Ser Pro
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Glu Tyr Glu Asn Val Val Pro Ile Ser Arg Pro Pro Glu Pro
820 825 830

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 Met Lys Phe Ile Gly Thr Ser Gly Ser Ile Thr Leu Gly Ala Asp Ile
 1 5 10 15

ata tgt cgg att ggt tgt cag ttc aat tat caa gca tct gca acc tgc 96
 Ile Cys Arg Ile Gly Cys Gln Phe Asn Tyr Gln Ala Ser Ala Thr Cys
 20 25 30

aat tct gtt ggg gcg tct gtc gca act gta gtc acc gct gat aat cct 144
 Asn Ser Val Gly Ala Ser Val Ala Thr Val Val Thr Ala Asp Asn Pro
 35 40 45

cga cgt tca gtg tct ttc cct att tat tgt gca agc tta gca tat gca 192
 Arg Arg Ser Val Ser Phe Pro Ile Tyr Cys Ala Ser Leu Ala Tyr Ala
 50 55 60

agc agt aaa tac aac aat atc tcg tca gaa aca gtc gga atc gcc cat 240
 Ser Ser Lys Tyr Asn Asn Ile Ser Ser Glu Thr Val Gly Ile Ala His
 65 70 75 80

ctg gaa cat aga caa tcc ctt gcg aaa gac ttc acg tgt tcc aat gcg 288
 Leu Glu His Arg Gln Ser Leu Ala Lys Asp Phe Thr Cys Ser Asn Ala
 85 90 95

agc caa gaa aca ttt gga caa aga agt ttt gtt att ctt gct gaa aac 336
 Ser Gln Glu Thr Phe Gly Gln Arg Ser Phe Val Ile Leu Ala Glu Asn
 100 105 110

aca aaa gac act gat gtg atg aaa agt tcc gtg gat aac gtt ttc aga 384
 Thr Lys Asp Thr Asp Val Met Lys Ser Ser Val Asp Asn Val Phe Arg
 115 120 125

aac aag aat agt atc ttc tac cag ctt agt cct ttt gtc aac tct gct 432
 Asn Lys Asn Ser Ile Phe Tyr Gln Leu Ser Pro Phe Val Asn Ser Ala
 130 135 140

cct cca cag cga tat gca aac ttt ttc gct gtt ctg aat aaa tgt tcc 480
 Pro Pro Gln Arg Tyr Ala Asn Phe Phe Ala Val Leu Asn Lys Cys Ser
 145 150 155 160

gaa act gca caa acg gag caa agc tct gac tat gga acg ttt tta aca 528
 Glu Thr Ala Gln Thr Glu Gln Ser Ser Asp Tyr Gly Thr Phe Leu Thr
 165 170 175

aaa gtt atg aat gtt act agt aaa tca caa caa cga ccc aat gat cca 576
 Lys Val Met Asn Val Thr Ser Lys Ser Gln Gln Arg Pro Asn Asp Pro
 180 185 190

agt gat cct gtc aag gtc aca aat ttc ctg cct caa gca att gca gga 624
 Ser Asp Pro Val Lys Val Thr Asn Phe Leu Pro Gln Ala Ile Ala Gly
 195 200 205

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| gcg aac gcc tat tct gac att ctg ctt gtg att aat tat aac gtg tct Ala Asn Ala Tyr Ser Asp Ile Leu Leu Val Ile Asn Tyr Asn Val Ser 210 215 220 | 672 |
| acc att acc gac aac gat gct acc gaa atc aaa agt gca tta gaa aaa Thr Ile Thr Asp Asn Asp Ala Thr Glu Ile Lys Ser Ala Leu Glu Lys 225 230 235 240 | 720 |
| caa aga tct cga cta tac att ctt ttt gtt caa acg tat ttc aac tac Gln Arg Ser Arg Leu Tyr Ile Leu Phe Val Gln Thr Tyr Phe Asn Tyr 245 250 255 | 768 |
| act gat act tac tat gcc atg aac aaa ctg gcg att gcg agt gga gga Thr Asp Thr Tyr Tyr Ala Met Asn Lys Leu Ala Ile Ala Ser Gly Gly 260 265 270 | 816 |
| gtg gcg att cga gtg aac act tat gat gat ttg agc acg ttc ttt gca Val Ala Ile Arg Val Asn Thr Tyr Asp Asp Leu Ser Thr Phe Phe Ala 275 280 285 | 864 |
| caa tac ttc cca ctt ctc gtt gca aat gac att gtc gca aaa gca tat Gln Tyr Phe Pro Leu Leu Val Ala Asn Asp Ile Val Ala Lys Ala Tyr 290 295 300 | 912 |
| gct gaa aac cca aga cct gga gtt gcg ttg aat aat gtc aat cta ctt Ala Glu Asn Pro Arg Pro Gly Val Ala Leu Asn Asn Val Asn Leu Leu 305 310 315 320 | 960 |
| gct caa caa tat gtt ctt ctt gta aca aat gag gat tca ttg gga gat Ala Gln Gln Tyr Val Leu Leu Val Thr Asn Glu Asp Ser Leu Gly Asp 325 330 335 | 1008 |
| ggc ccg gtg cca gca tcg gta act gtt acc ggg att aat gtt aca caa Gly Pro Val Pro Ala Ser Val Thr Val Thr Gly Ile Asn Val Thr Gln 340 345 350 | 1056 |
| cta cca aca att ggc gaa ctt caa tta ttc act ctt att cca gaa aag Leu Pro Thr Ile Gly Glu Leu Gln Leu Phe Thr Leu Ile Pro Glu Lys 355 360 365 | 1104 |
| gct gga aaa ttc act cca ttg ttc tat tca tct tca tct ttt gat gac Ala Gly Lys Phe Thr Pro Leu Phe Tyr Ser Ser Ser Ser Phe Asp Asp 370 375 380 | 1152 |
| ggg tca aaa att acc att aca tac agt gat gca aca aac cca gca aat Gly Ser Lys Ile Thr Ile Thr Tyr Ser Asp Ala Thr Asn Pro Ala Asn 385 390 395 400 | 1200 |
| cca att tat aat gga aat att acg tct gct tta aat gac tgc aaa tat Pro Ile Tyr Asn Gly Asn Ile Thr Ser Ala Leu Asn Asp Cys Lys Tyr 405 410 415 | 1248 |
| tat gca aac aca aaa aat tac gcc tgg gcc tgt agt att tcc gaa atc Tyr Ala Asn Thr Lys Asn Tyr Ala Trp Ala Cys Ser Ile Ser Glu Ile 420 425 430 | 1296 |

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|---|------|
| gca tta tta tta caa ttt tca atg aga aat att cag atc gat aga gtt Ala Leu Leu Leu Gln Phe Ser Met Arg Asn Ile Gln Ile Asp Arg Val 435 440 445 | 1344 |
| ttg aac ggt gaa acg att tcg aga acc ttc cca att act tgc ctt gga Leu Asn Gly Glu Thr Ile Ser Arg Thr Phe Pro Ile Thr Cys Leu Gly 450 455 460 | 1392 |
| gca gat gta gga gac tgc ctc aac ggt gga aat cta aca gat gct ggt Ala Asp Val Gly Asp Cys Leu Asn Gly Gly Asn Leu Thr Asp Ala Gly 465 470 475 480 | 1440 |
| tca tgc att tgc cca tta cag tgg aca gga act aac tgt caa gct ccg Ser Cys Ile Cys Pro Leu Gln Trp Thr Gly Thr Asn Cys Gln Ala Pro 485 490 495 | 1488 |
| caa tgc ttg aat gga ggt aca ctg aaa act gat gac act tgt gca tgt Gln Cys Leu Asn Gly Gly Thr Leu Lys Thr Asp Asp Thr Cys Ala Cys 500 505 510 | 1536 |
| ctc gat agt ttc aaa gga gat ttt tgt gaa aca agt acc tct gtt tgc Leu Asp Ser Phe Lys Gly Asp Phe Cys Glu Thr Ser Thr Ser Val Cys 515 520 525 | 1584 |
| gct gga gct ccg aca tct ccg gac tat cgc tct gaa ctg agt tca ttg Ala Gly Ala Pro Thr Ser Pro Asp Tyr Arg Ser Glu Leu Ser Ser Leu 530 535 540 | 1632 |
| gta att gtt gct gat gtc aac gca tta tca aca agt agt cta agc aat Val Ile Val Ala Asp Val Asn Ala Leu Ser Thr Ser Ser Leu Ser Asn 545 550 555 560 | 1680 |
| acg gta ccc gga ata act gga gtg cca att act gtc att cta tat ggc Thr Val Pro Gly Ile Thr Gly Val Pro Ile Thr Val Ile Leu Tyr Gly 565 570 575 | 1728 |
| gat gga aat gct cca aga att gtt cag tct aca act aac agt gag cat Asp Gly Asn Ala Pro Arg Ile Val Gln Ser Thr Thr Asn Ser Glu His 580 585 590 | 1776 |
| ctc tcc gag gta tta ggt gca ccg acg ggt acc aca act tca cca agt Leu Ser Glu Val Leu Gly Ala Pro Thr Gly Thr Thr Ser Pro Ser 595 600 605 | 1824 |
| tca acg gct tca cca gca cca tcc gca agt gat atg tat aag gct ctg Ser Thr Ala Ser Pro Ala Pro Ser Ala Ser Asp Met Tyr Lys Ala Leu 610 615 620 | 1872 |
| aat ttg gca ctt gac aat cag ctc acc gac cgt gca ttt gta att gta Asn Leu Ala Leu Asp Asn Gln Leu Thr Asp Arg Ala Phe Val Ile Val 625 630 635 640 | 1920 |
| tac aca tca aat tcc aat gtc acc att gat cct gac ttt ttg atc cgt Tyr Thr Ser Asn Ser Asn Val Thr Ile Asp Pro Asp Phe Leu Ile Arg 645 650 655 | 1968 |

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| ttg gca gtc aga aga gcc gaa gta cga gtg ttg tca act tcg gga act Leu Ala Val Arg Arg Ala Glu Val Arg Val Leu Ser Thr Ser Gly Thr 660 665 670 | 2016 |
| gaa agt caa aac tct ata aca tta tcg cta gtc gga aat gga att cct Glu Ser Gln Asn Ser Ile Thr Leu Ser Leu Val Gly Asn Gly Ile Pro 675 680 685 | 2064 |
| att gcg ata aat ggc gcg aaa gat ttc gaa aat tac ctg aca tac tac Ile Ala Ile Asn Gly Ala Lys Asp Phe Glu Asn Tyr Leu Thr Tyr Tyr 690 695 700 | 2112 |
| gtt gtt ccc tta ttc caa tca cta caa tac caa gtg aac act cca caa Val Val Pro Leu Phe Gln Ser Leu Gln Tyr Gln Val Asn Thr Pro Gln 705 710 715 720 | 2160 |
| cga gtg ttc aat gtg ttc caa aca ggt caa ttc tac aac tct acg caa Arg Val Phe Asn Val Phe Gln Thr Gly Gln Phe Tyr Asn Ser Thr Gln 725 730 735 | 2208 |
| att tct atc cca gca gat tcc aca ttt gat aac gct aaa cca aat ctt Ile Ser Ile Pro Ala Asp Ser Thr Phe Asp Asn Ala Lys Pro Asn Leu 740 745 750 | 2256 |
| ttt gtg cat gtg tac gaa ggt cgc att aat tat tca gat cct tca aca Phe Val His Val Tyr Glu Gly Arg Ile Asn Tyr Ser Asp Pro Ser Thr 755 760 765 | 2304 |
| aat gga aac gag gtt ggc aat tct act ata tac ttt ctc cct tat gac Asn Gly Asn Glu Val Gly Asn Ser Thr Ile Tyr Phe Leu Pro Tyr Asp 770 775 780 | 2352 |
| ccc aca aaa cct atc aac tta att gtg aat aat aat ggc acg acc ggt Pro Thr Lys Pro Ile Asn Leu Ile Val Asn Asn Asn Gly Thr Thr Gly 785 790 795 800 | 2400 |
| tac tac gca atc gaa gtc atc gga tat cta aag aca tca tat ggt ttc Tyr Tyr Ala Ile Glu Val Ile Gly Tyr Leu Lys Thr Ser Tyr Gly Phe 805 810 815 | 2448 |
| aat att gat aat gct aac gga tca aat gaa aac ctg aac tcg gga gta Asn Ile Asp Asn Ala Asn Gly Ser Asn Glu Asn Leu Asn Ser Gly Val 820 825 830 | 2496 |
| gta tat aac caa caa aac aca ttg aat atc tat tct gcg ccg ttt tca Val Tyr Asn Gln Gln Asn Thr Leu Asn Ile Tyr Ser Ala Pro Phe Ser 835 840 845 | 2544 |
| cag ctt cct aaa act gat cca tca aac ttc cca tat ctc aca ctt gga Gln Leu Pro Lys Thr Asp Pro Ser Asn Phe Pro Tyr Leu Thr Leu Gly 850 855 860 | 2592 |
| gaa att gcc agt aac gga aca gtt tta cct gca aca aca gtt ttg ttt Glu Ile Ala Ser Asn Gly Thr Val Leu Pro Ala Thr Thr Val Leu Phe 865 870 875 880 | 2640 |

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| aca aga aaa agt ggt gcg tcc tgt ttt tac agt cac ttc acc gtt ctt | 2688 |
| Thr Arg Lys Ser Gly Ala Ser Cys Phe Tyr Ser His Phe Thr Val Leu | |
| 885 890 895 | |
| gat gtc tgc tcc caa agc aca aca att gga tat cag gca cag ttg acc | 2736 |
| Asp Val Cys Ser Gln Ser Thr Thr Ile Gly Tyr Gln Ala Gln Leu Thr | |
| 900 905 910 | |
| aca aga aca agc acc ttg aca aat agg att caa caa ttt gtg ctg aca | 2784 |
| Thr Arg Thr Ser Thr Leu Thr Asn Arg Ile Gln Gln Phe Val Leu Thr | |
| 915 920 925 | |
| tgc ttt aaa aca agt tat gca aat aat gat act tcc tgc cat gga cat | 2832 |
| Cys Phe Lys Thr Ser Tyr Ala Asn Asn Asp Thr Ser Cys His Gly His | |
| 930 935 940 | |
| gga tca cca atg gca acc tgt gcc tgt aat gct gac ttc gga gga att | 2880 |
| Gly Ser Pro Met Ala Thr Cys Ala Cys Asn Ala Asp Phe Gly Gly Ile | |
| 945 950 955 960 | |
| gat tgc act gaa ccg gct tgt gta aat gga ggt gtt cgg gat ggg tcg | 2928 |
| Asp Cys Thr Glu Pro Ala Cys Val Asn Gly Gly Val Arg Asp Gly Ser | |
| 965 970 975 | |
| gtt tgt cgt tgt cct gta aga ttc tat ggg ctt cga tgt gaa gaa tgt | 2976 |
| Val Cys Arg Cys Pro Val Arg Phe Tyr Gly Leu Arg Cys Glu Glu Cys | |
| 980 985 990 | |
| gag tct agg caa aat ctg cct ata aga aaa tta tcc aca cct aat tac | 3024 |
| Glu Ser Arg Gln Asn Leu Pro Ile Arg Lys Leu Ser Thr Pro Asn Tyr | |
| 995 1000 1005 | |
| gga caa att act gac aaa tta ctg gta aag aaa ttc att cag ttc | 3069 |
| Gly Gln Ile Thr Asp Lys Leu Leu Val Lys Lys Phe Ile Gln Phe | |
| 1010 1015 1020 | |
| cct ttt gaa tca gaa cca gct tcg tct act gtc tcc gtg ata act | 3114 |
| Pro Phe Glu Ser Glu Pro Ala Ser Ser Thr Val Ser Val Ile Thr | |
| 1025 1030 1035 | |
| tca act act atg ctg cct tct acg tca act gtt gct cca agc aca | 3159 |
| Ser Thr Thr Met Leu Pro Ser Thr Ser Thr Val Ala Pro Ser Thr | |
| 1040 1045 1050 | |
| agc caa tca aca ata gtt tcc act gtt act aca cag tca cca agt | 3204 |
| Ser Gln Ser Thr Ile Val Ser Thr Val Thr Thr Gln Ser Pro Ser | |
| 1055 1060 1065 | |
| cct tca aca aca gct cca aaa caa gtc cga gct gct gca ttc att | 3249 |
| Pro Ser Thr Thr Ala Pro Lys Gln Val Arg Ala Ala Ala Phe Ile | |
| 1070 1075 1080 | |
| att gac tgc atg gga act gat gat tat gct ttc aat cag aca ttc | 3294 |
| Ile Asp Cys Met Gly Thr Asp Asp Tyr Ala Phe Asn Gln Thr Phe | |
| 1085 1090 1095 | |

| | |
|---|------|
| aaa tcg att gca cag tac ttc aag aca ttt ggc tat agc cat tac | 3339 |
| Lys Ser Ile Ala Gln Tyr Phe Lys Thr Phe Gly Tyr Ser His Tyr | |
| 1100 1105 1110 | |
| atc atg tta acc aat aat ttg aat gga agt tta caa ttg aac aat | 3384 |
| Ile Met Leu Thr Asn Asn Leu Asn Gly Ser Leu Gln Leu Asn Asn | |
| 1115 1120 1125 | |
| gga agt tta cta ttt gaa gat ttc caa caa tat tca gat gag agt | 3429 |
| Gly Ser Leu Leu Phe Glu Asp Phe Gln Gln Tyr Ser Asp Glu Ser | |
| 1130 1135 1140 | |
| atg att atg agc aaa cta ccc ctg tat tgg agt tta aga gcc acc | 3474 |
| Met Ile Met Ser Lys Leu Pro Leu Tyr Trp Ser Leu Arg Ala Thr | |
| 1145 1150 1155 | |
| cca agt aga acc gct agc gtc agc aac gcg ctc agt aag att ctt | 3519 |
| Pro Ser Arg Thr Ala Ser Val Ser Asn Ala Leu Ser Lys Ile Leu | |
| 1160 1165 1170 | |
| gca agt tac aat aga aac ggt aca gag ttc aaa aac tct gta agc | 3564 |
| Ala Ser Tyr Asn Arg Asn Gly Thr Glu Phe Lys Asn Ser Val Ser | |
| 1175 1180 1185 | |
| atg aat att ttt tat gca act caa ata ggg ctg ggc gat gag gat | 3609 |
| Met Asn Ile Phe Tyr Ala Thr Gln Ile Gly Leu Gly Asp Glu Asp | |
| 1190 1195 1200 | |
| cca act gca gca ggc tta gaa gtt ttc aac aag agc gcg att gta | 3654 |
| Pro Thr Ala Ala Gly Leu Glu Val Phe Asn Lys Ser Ala Ile Val | |
| 1205 1210 1215 | |
| tat tct gca ttc gca aaa aat gcc aac cag aca att gtg act tct | 3699 |
| Tyr Ser Ala Phe Ala Lys Asn Ala Asn Gln Thr Ile Val Thr Ser | |
| 1220 1225 1230 | |
| ctt caa aaa ttc agt acc gac gta acc act gct aga gat tat tac | 3744 |
| Leu Gln Lys Phe Ser Thr Asp Val Thr Thr Ala Arg Asp Tyr Tyr | |
| 1235 1240 1245 | |
| agt ggt ctt tct gat atg tat gaa agc act caa ccc cag ggt tcg | 3789 |
| Ser Gly Leu Ser Asp Met Tyr Glu Ser Thr Gln Pro Gln Gly Ser | |
| 1250 1255 1260 | |
| aat gag ctc cct cca aaa ccg gat caa ctt agt tgt gtg tac ggc | 3834 |
| Asn Glu Leu Pro Pro Lys Pro Asp Gln Leu Ser Cys Val Tyr Gly | |
| 1265 1270 1275 | |
| ctg caa tcg aat atc aaa att gca att gat aga tcc aac tcg tca | 3879 |
| Leu Gln Ser Asn Ile Lys Ile Ala Ile Asp Arg Ser Asn Ser Ser | |
| 1280 1285 1290 | |
| aac cca gag gtt aac aca att atg aat aat ttc ctt gtc aat ttc | 3924 |
| Asn Pro Glu Val Asn Thr Ile Met Asn Asn Phe Leu Val Asn Phe | |
| 1295 1300 1305 | |

| | |
|---|------|
| cgt ctt gga ttt aat tat att gaa aat gat gac aac aga tgc ggg | 3969 |
| Arg Leu Gly Phe Asn Tyr Ile Glu Asn Asp Asp Asn Arg Cys Gly | |
| 1310 1315 1320 | |
| gat aag tta cca gaa ttt tat acc gga cga act gca tta acg gcg | 4014 |
| Asp Lys Leu Pro Glu Phe Tyr Thr Gly Arg Thr Ala Leu Thr Ala | |
| 1325 1330 1335 | |
| ttc ccg tat tat gat gcc att gca aaa ata gca aca ttt tgt cca | 4059 |
| Phe Pro Tyr Tyr Asp Ala Ile Ala Lys Ile Ala Thr Phe Cys Pro | |
| 1340 1345 1350 | |
| tct caa tac act tcg atg cta tca ttc caa gtc gtc gga agc caa | 4104 |
| Ser Gln Tyr Thr Ser Met Leu Ser Phe Gln Val Val Gly Ser Gln | |
| 1355 1360 1365 | |
| tta cag cca aac ttc acc gat aaa tat gtc aaa gtc att agc aag | 4149 |
| Leu Gln Pro Asn Phe Thr Asp Lys Tyr Val Lys Val Ile Ser Lys | |
| 1370 1375 1380 | |
| aac att aac agt gcc gat tgt tcg tgc aac aga ttc aac gac act | 4194 |
| Asn Ile Asn Ser Ala Asp Cys Ser Cys Asn Arg Phe Asn Asp Thr | |
| 1385 1390 1395 | |
| aac act gcg aag ttt atc att tgg atg cct cgt tct gca gcg ccc | 4239 |
| Asn Thr Ala Lys Phe Ile Ile Trp Met Pro Arg Ser Ala Ala Pro | |
| 1400 1405 1410 | |
| gtc act gat gat gat tat tta acc ttg ctc aaa ctc aac acc aca | 4284 |
| Val Thr Asp Asp Asp Tyr Leu Thr Leu Leu Lys Leu Asn Thr Thr | |
| 1415 1420 1425 | |
| aat gca tat cac ttt gtc gtt cca ttt tac gat agt gct gat aac | 4329 |
| Asn Ala Tyr His Phe Val Val Pro Phe Tyr Asp Ser Ala Asp Asn | |
| 1430 1435 1440 | |
| agt acc gat ttg tac tac cag att ctt gtg aag caa gca gga ccc | 4374 |
| Ser Thr Asp Leu Tyr Tyr Gln Ile Leu Val Lys Gln Ala Gly Pro | |
| 1445 1450 1455 | |
| gaa ggt ccc gat tat tat tgg tta cca aat gca gtt aat gct aca | 4419 |
| Glu Gly Pro Asp Tyr Tyr Trp Leu Pro Asn Ala Val Asn Ala Thr | |
| 1460 1465 1470 | |
| aat ttg caa acg aat gta ata aat att cta tac gag aag ctt tgc | 4464 |
| Asn Leu Gln Thr Asn Val Ile Asn Ile Leu Tyr Glu Lys Leu Cys | |
| 1475 1480 1485 | |
| caa act gcc ggt gtt gac cca aca gca atc cca cca taa | 4503 |
| Gln Thr Ala Gly Val Asp Pro Thr Ala Ile Pro Pro | |
| 1490 1495 1500 | |

<210> 136
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 <212> PRT
 <213> Caenorhabditis elegans

<400> 136

Met Lys Phe Ile Gly Thr Ser Gly Ser Ile Thr Leu Gly Ala Asp Ile
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Ile Cys Arg Ile Gly Cys Gln Phe Asn Tyr Gln Ala Ser Ala Thr Cys
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Asn Ser Val Gly Ala Ser Val Ala Thr Val Val Thr Ala Asp Asn Pro
 35 40 45

Arg Arg Ser Val Ser Phe Pro Ile Tyr Cys Ala Ser Leu Ala Tyr Ala
 50 55 60

Ser Ser Lys Tyr Asn Asn Ile Ser Ser Glu Thr Val Gly Ile Ala His
 65 70 75 80

Leu Glu His Arg Gln Ser Leu Ala Lys Asp Phe Thr Cys Ser Asn Ala
 85 90 95

Ser Gln Glu Thr Phe Gly Gln Arg Ser Phe Val Ile Leu Ala Glu Asn
 100 105 110

Thr Lys Asp Thr Asp Val Met Lys Ser Ser Val Asp Asn Val Phe Arg
 115 120 125

Asn Lys Asn Ser Ile Phe Tyr Gln Leu Ser Pro Phe Val Asn Ser Ala
 130 135 140

Pro Pro Gln Arg Tyr Ala Asn Phe Phe Ala Val Leu Asn Lys Cys Ser
 145 150 155 160

Glu Thr Ala Gln Thr Glu Gln Ser Ser Asp Tyr Gly Thr Phe Leu Thr
 165 170 175

Lys Val Met Asn Val Thr Ser Lys Ser Gln Gln Arg Pro Asn Asp Pro
 180 185 190

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Thr Ile Thr Asp Asn Asp Ala Thr Glu Ile Lys Ser Ala Leu Glu Lys
225 230 235 240

Thr Asp Thr Tyr Tyr Ala Met Asn Lys Leu Ala Ile Ala Ser Gly Gly
260 265 270

Gln Tyr Phe Pro Leu Leu Val Ala Asn Asp Ile Val Ala Lys Ala Tyr
290 295 300

Ala Glu Asn Pro Arg Pro Gly Val Ala Leu Asn Asn Val Asn Leu Leu
305 310 315 320

Ala Gln Gln Tyr Val Leu Leu Val Thr Asn Glu Asp Ser Leu Gly Asp
325 330 335

Gly Pro Val Pro Ala Ser Val Thr Val Thr Gly Ile Asn Val Thr Gln
340 345 350

Leu Pro Thr Ile Gly Glu Leu Gln Leu Phe Thr Leu Ile Pro Glu Lys
355 360 365

Ala Gly Lys Phe Thr Pro Leu Phe Tyr Ser Ser Ser Ser Phe Asp Asp
370 375 380

Gly Ser Lys Ile Thr Ile Thr Tyr Ser Asp Ala Thr Asn Pro Ala Asn
385 390 395 400

Pro Ile Tyr Asn Gly Asn Ile Thr Ser Ala Leu Asn Asp Cys Lys Tyr
405 410 415

Tyr Thr Ser Asn Ser Asn Val Thr Ile Asp Pro Asp Phe Leu Ile Arg
645 650 655

Leu Ala Val Arg Arg Ala Glu Val Arg Val Leu Ser Thr Ser Gly Thr
660 665 670

Glu Ser Gln Asn Ser Ile Thr Leu Ser Leu Val Gly Asn Gly Ile Pro
675 680 685

Ile Ala Ile Asn Gly Ala Lys Asp Phe Glu Asn Tyr Leu Thr Tyr Tyr
690 695 700

Val Val Pro Leu Phe Gln Ser Leu Gln Tyr Gln Val Asn Thr Pro Gln
705 710 715 720

Arg Val Phe Asn Val Phe Gln Thr Gly Gln Phe Tyr Asn Ser Thr Gln
725 730 735

Ile Ser Ile Pro Ala Asp Ser Thr Phe Asp Asn Ala Lys Pro Asn Leu
740 745 750

Phe Val His Val Tyr Glu Gly Arg Ile Asn Tyr Ser Asp Pro Ser Thr
755 760 765

Asn Gly Asn Glu Val Gly Asn Ser Thr Ile Tyr Phe Leu Pro Tyr Asp
770 775 780

Pro Thr Lys Pro Ile Asn Leu Ile Val Asn Asn Asn Gly Thr Thr Gly
785 790 795 800

Tyr Tyr Ala Ile Glu Val Ile Gly Tyr Leu Lys Thr Ser Tyr Gly Phe
805 810 815

Asn Ile Asp Asn Ala Asn Gly Ser Asn Glu Asn Leu Asn Ser Gly Val
820 825 830

Val Tyr Asn Gln Gln Asn Thr Leu Asn Ile Tyr Ser Ala Pro Phe Ser
835 840 845

Gln Leu Pro Lys Thr Asp Pro Ser Asn Phe Pro Tyr Leu Thr Leu Gly
850 855 860

Glu Ile Ala Ser Asn Gly Thr Val Leu Pro Ala Thr Thr Val Leu Phe
865 870 875 880

Thr Arg Lys Ser Gly Ala Ser Cys Phe Tyr Ser His Phe Thr Val Leu
885 890 895

Asp Val Cys Ser Gln Ser Thr Thr Ile Gly Tyr Gln Ala Gln Leu Thr
900 905 910

Thr Arg Thr Ser Thr Leu Thr Asn Arg Ile Gln Gln Phe Val Leu Thr
915 920 925

Cys Phe Lys Thr Ser Tyr Ala Asn Asn Asp Thr Ser Cys His Gly His
930 935 940

Gly Ser Pro Met Ala Thr Cys Ala Cys Asn Ala Asp Phe Gly Gly Ile
945 950 955 960

Asp Cys Thr Glu Pro Ala Cys Val Asn Gly Gly Val Arg Asp Gly Ser
965 970 975

Val Cys Arg Cys Pro Val Arg Phe Tyr Gly Leu Arg Cys Glu Glu Cys
980 985 990

Glu Ser Arg Gln Asn Leu Pro Ile Arg Lys Leu Ser Thr Pro Asn Tyr
995 1000 1005

Gly Gln Ile Thr Asp Lys Leu Leu Val Lys Lys Phe Ile Gln Phe
1010 1015 1020

Pro Phe Glu Ser Glu Pro Ala Ser Ser Thr Val Ser Val Ile Thr
1025 1030 1035

Ser Thr Thr Met Leu Pro Ser Thr Ser Thr Val Ala Pro Ser Thr
1040 1045 1050

Ser Gln Ser Thr Ile Val Ser Thr Val Thr Thr Gln Ser Pro Ser
1055 1060 1065

Pro Ser Thr Thr Ala Pro Lys Gln Val Arg Ala Ala Ala Phe Ile
1070 1075 1080

Ile Asp Cys Met Gly Thr Asp Asp Tyr Ala Phe Asn Gln Thr Phe
 1085 1090 1095

Lys Ser Ile Ala Gln Tyr Phe Lys Thr Phe Gly Tyr Ser His Tyr
 1100 1105 1110

Ile Met Leu Thr Asn Asn Leu Asn Gly Ser Leu Gln Leu Asn Asn
 1115 1120 1125

Gly Ser Leu Leu Phe Glu Asp Phe Gln Gln Tyr Ser Asp Glu Ser
 1130 1135 1140

Met Ile Met Ser Lys Leu Pro Leu Tyr Trp Ser Leu Arg Ala Thr
 1145 1150 1155

Pro Ser Arg Thr Ala Ser Val Ser Asn Ala Leu Ser Lys Ile Leu
 1160 1165 1170

Ala Ser Tyr Asn Arg Asn Gly Thr Glu Phe Lys Asn Ser Val Ser
 1175 1180 1185

Met Asn Ile Phe Tyr Ala Thr Gln Ile Gly Leu Gly Asp Glu Asp
 1190 1195 1200

Pro Thr Ala Ala Gly Leu Glu Val Phe Asn Lys Ser Ala Ile Val
 1205 1210 1215

Tyr Ser Ala Phe Ala Lys Asn Ala Asn Gln Thr Ile Val Thr Ser
 1220 1225 1230

Leu Gln Lys Phe Ser Thr Asp Val Thr Thr Ala Arg Asp Tyr Tyr
 1235 1240 1245

Ser Gly Leu Ser Asp Met Tyr Glu Ser Thr Gln Pro Gln Gly Ser
 1250 1255 1260

Asn Glu Leu Pro Pro Lys Pro Asp Gln Leu Ser Cys Val Tyr Gly
 1265 1270 1275

Leu Gln Ser Asn Ile Lys Ile Ala Ile Asp Arg Ser Asn Ser Ser
 1280 1285 1290

Asn Pro Glu Val Asn Thr Ile Met Asn Asn Phe Leu Val Asn Phe
1295 1300 1305

Arg Leu Gly Phe Asn Tyr Ile Glu Asn Asp Asp Asn Arg Cys Gly
1310 1315 1320

Asp Lys Leu Pro Glu Phe Tyr Thr Gly Arg Thr Ala Leu Thr Ala
1325 1330 1335

Phe Pro Tyr Tyr Asp Ala Ile Ala Lys Ile Ala Thr Phe Cys Pro
1340 1345 1350

Ser Gln Tyr Thr Ser Met Leu Ser Phe Gln Val Val Gly Ser Gln
1355 1360 1365

Leu Gln Pro Asn Phe Thr Asp Lys Tyr Val Lys Val Ile Ser Lys
1370 1375 1380

Asn Ile Asn Ser Ala Asp Cys Ser Cys Asn Arg Phe Asn Asp Thr
1385 1390 1395

Asn Thr Ala Lys Phe Ile Ile Trp Met Pro Arg Ser Ala Ala Pro
1400 1405 1410

Val Thr Asp Asp Asp Tyr Leu Thr Leu Leu Lys Leu Asn Thr Thr
1415 1420 1425

Asn Ala Tyr His Phe Val Val Pro Phe Tyr Asp Ser Ala Asp Asn
1430 1435 1440

Ser Thr Asp Leu Tyr Tyr Gln Ile Leu Val Lys Gln Ala Gly Pro
1445 1450 1455

Glu Gly Pro Asp Tyr Tyr Trp Leu Pro Asn Ala Val Asn Ala Thr
1460 1465 1470

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1475 1480 1485

Gln Thr Ala Gly Val Asp Pro Thr Ala Ile Pro Pro
1490 1495 1500

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 gtcttaaaca gtgactttgt tttttagtag gct gca tcc cat atc tat caa aat 112
 Ala Ala Ser His Ile Tyr Gln Asn
 1 5
 caa ttt gtt caa atg atc ctc aat tca ctt att aac aag tca aaa tct 160
 Gln Phe Val Gln Met Ile Leu Asn Ser Leu Ile Asn Lys Ser Lys Ser
 10 15 20
 tct atg ttc caa gtc aga act ttg aga gaa ctg tta tgg ggc tat agg 208
 Ser Met Phe Gln Val Arg Thr Leu Arg Glu Leu Leu Trp Gly Tyr Arg
 25 30 35 40
 gat cca ttt ttg agt ttg gtt ccg tac cct gtt act acc aca gtt ggt 256
 Asp Pro Phe Leu Ser Leu Val Pro Tyr Pro Val Thr Thr Thr Val Gly
 45 50 55
 ctg ttt tat cct gtaagtacca aatatgaatg gcaatattat tacatttta 308
 Leu Phe Tyr Pro
 60
 ttttaattaat tcaatggcat tggcaaggca taattttata atttagctca ttagctatgc 368
 t 369

<210> 138
 <211> 60
 <212> PRT
 <213> Homo sapiens

<400> 138

Ala Ala Ser His Ile Tyr Gln Asn Gln Phe Val Gln Met Ile Leu Asn
 1 5 10 15
 Ser Leu Ile Asn Lys Ser Lys Ser Ser Met Phe Gln Val Arg Thr Leu
 20 25 30
 Arg Glu Leu Leu Trp Gly Tyr Arg Asp Pro Phe Leu Ser Leu Val Pro
 35 40 45

| | |
|---|------|
| tgg tgg tgc tcc acg tgc cgc cgc ccg tgc cag tgc aac acc gcg gcg | 533 |
| Trp Trp Ser Ser Thr Cys Arg Arg Pro Cys Gln Cys Asn Thr Ala Ala | |
| 155 160 165 | |
| gcg cgc tgc gag cag gcc acg ggc gcc tgc gtg tgc aag ccg ggc tgg | 581 |
| Ala Arg Cys Glu Gln Ala Thr Gly Ala Cys Val Cys Lys Pro Gly Trp | |
| 170 175 180 185 | |
| tgg ggg cgc cgc tgc agc ttc cgc tgc aac tgc cac ggc tcc ccg tgc | 629 |
| Trp Gly Arg Arg Cys Ser Phe Arg Cys Asn Cys His Gly Ser Pro Cys | |
| 190 195 200 | |
| gag cag gac tcc ggc cgc tgc gcc tgc cgg ccg ggc tgg tgg ggt ccc | 677 |
| Glu Gln Asp Ser Gly Arg Cys Ala Cys Arg Pro Gly Trp Trp Gly Pro | |
| 205 210 215 | |
| gaa tgc cag cag cag tgc gag tgt gtg cgg ggc cgc tgc agc gcc gcc | 725 |
| Glu Cys Gln Gln Gln Cys Glu Cys Val Arg Gly Arg Cys Ser Ala Ala | |
| 220 225 230 | |
| tcc ggc gag tgc acc tgc ccg ccc ggc ttc cgc gga gcg cgc tgc gag | 773 |
| Ser Gly Glu Cys Thr Cys Pro Pro Gly Phe Arg Gly Ala Arg Cys Glu | |
| 235 240 245 | |
| ctg ccc tgc ccg gca ggc agc cac ggg gtg cag tgc gca cac agc tgt | 821 |
| Leu Pro Cys Pro Ala Gly Ser His Gly Val Gln Cys Ala His Ser Cys | |
| 250 255 260 265 | |
| ggc cgc tgc aaa cac aat gag ccg tgc tct cca gac aca ggc agc tgt | 869 |
| Gly Arg Cys Lys His Asn Glu Pro Cys Ser Pro Asp Thr Gly Ser Cys | |
| 270 275 280 | |
| gag tcc tgc gag ccg ggc tgg aac ggg acc cag tgc cag cag ccc tgc | 917 |
| Glu Ser Cys Glu Pro Gly Trp Asn Gly Thr Gln Cys Gln Gln Pro Cys | |
| 285 290 295 | |
| ctg cct ggc acc ttt ggc gag agc tgc gaa cag cag tgc cct cac tgc | 965 |
| Leu Pro Gly Thr Phe Gly Glu Ser Cys Glu Gln Gln Cys Pro His Cys | |
| 300 305 310 | |
| cga cat ggg gag gcc tgt gag cca gat act ggc cac tgt cag cgc tgt | 1013 |
| Arg His Gly Glu Ala Cys Glu Pro Asp Thr Gly His Cys Gln Arg Cys | |
| 315 320 325 | |
| gac cct ggc tgg ctg ggg ccc agg tgt gaa gac ccc tgc ccc act ggt | 1061 |
| Asp Pro Gly Trp Leu Gly Pro Arg Cys Glu Asp Pro Cys Pro Thr Gly | |
| 330 335 340 345 | |
| acc ttt ggg gaa gac tgt ggc tct acc tgc ccc acc tgt gtt cag ggg | 1109 |
| Thr Phe Gly Glu Asp Cys Gly Ser Thr Cys Pro Thr Cys Val Gln Gly | |
| 350 355 360 | |
| tcc tgt gat act gtg aca ggg gac tgt gtc tgc agt gcc ggc tac tgg | 1157 |
| Ser Cys Asp Thr Val Thr Gly Asp Cys Val Cys Ser Ala Gly Tyr Trp | |
| 365 370 375 | |

| | |
|---|------|
| ggg ccc agc tgc aac gcc tcc tgc cca gcc ggt ttc cat gga aac aac | 1205 |
| Gly Pro Ser Cys Asn Ala Ser Cys Pro Ala Gly Phe His Gly Asn Asn | |
| 380 385 390 | |
| tgc tca gtt cct tgt gaa tgc cca gag gga ctc tgc cac cct gtc tct | 1253 |
| Cys Ser Val Pro Cys Glu Cys Pro Glu Gly Leu Cys His Pro Val Ser | |
| 395 400 405 | |
| ggg tcc tgc cag cca ggc tct ggc agt cgg gac act gcc ctc atc gcg | 1301 |
| Gly Ser Cys Gln Pro Gly Ser Gly Ser Arg Asp Thr Ala Leu Ile Ala | |
| 410 415 420 425 | |
| ggc agc ctt gtg cct ctg ctg ctg ctc ttc ctg ggc ctt gcc tgc tgt | 1349 |
| Gly Ser Leu Val Pro Leu Leu Leu Leu Phe Leu Gly Leu Ala Cys Cys | |
| 430 435 440 | |
| gcc tgc tgc tgc tgg gcc ccc cga tca gac ctc aag gac agg cca gcg | 1397 |
| Ala Cys Cys Cys Trp Ala Pro Arg Ser Asp Leu Lys Asp Arg Pro Ala | |
| 445 450 455 | |
| aga gat gga gct acc gtg tcc agg atg aag ctg cag gtc tgg ggg aca | 1445 |
| Arg Asp Gly Ala Thr Val Ser Arg Met Lys Leu Gln Val Trp Gly Thr | |
| 460 465 470 | |
| ctg acc agc ttg ggc tcc acg ctg ccc tgc cgt tcc ctc agc tcc cac | 1493 |
| Leu Thr Ser Leu Gly Ser Thr Leu Pro Cys Arg Ser Leu Ser Ser His | |
| 475 480 485 | |
| aag cta ccc tgg gtg aca gtc tca cat cac gac ccg gag gtc ccc ttc | 1541 |
| Lys Leu Pro Trp Val Thr Val Ser His His Asp Pro Glu Val Pro Phe | |
| 490 495 500 505 | |
| aac cac agc ttc atc gag ccg ccc tct gcc ggc tgg gcc act gat gac | 1589 |
| Asn His Ser Phe Ile Glu Pro Pro Ser Ala Gly Trp Ala Thr Asp Asp | |
| 510 515 520 | |
| tcc ttc tca tcc gat cct gag tct gga gag gca gat gag gtt cct gcc | 1637 |
| Ser Phe Ser Ser Asp Pro Glu Ser Gly Glu Ala Asp Glu Val Pro Ala | |
| 525 530 535 | |
| tac tgt gtg cca ccc caa gaa ggg atg gtc cct gtg gcc cag gca ggg | 1685 |
| Tyr Cys Val Pro Pro Gln Glu Gly Met Val Pro Val Ala Gln Ala Gly | |
| 540 545 550 | |
| tcg tca gag gcc agc ctg gct gca ggt gct ttc ccg ccc cct gag gac | 1733 |
| Ser Ser Glu Ala Ser Leu Ala Ala Gly Ala Phe Pro Pro Pro Glu Asp | |
| 555 560 565 | |
| gcc tcc acg cca ttc gcc atc ccg cgc acc tcc agc cta gct cgg gcc | 1781 |
| Ala Ser Thr Pro Phe Ala Ile Pro Arg Thr Ser Ser Leu Ala Arg Ala | |
| 570 575 580 585 | |
| aag cgg cca tcg gtc tcc ttc gcg gaa ggt acc aag ttt gca cca cag | 1829 |
| Lys Arg Pro Ser Val Ser Phe Ala Glu Gly Thr Lys Phe Ala Pro Gln | |
| 590 595 600 | |

| | |
|---|------|
| agt cgc cga agc tca ggg gag ctc tcc agc ccg ctc cga aag ccc aag | 1877 |
| Ser Arg Arg Ser Ser Gly Glu Leu Ser Ser Pro Leu Arg Lys Pro Lys | |
| 605 610 615 | |
| agg ctc tcc cgg ggg gcg cag tcg ggt cct gag ggc cgg gaa gcc gaa | 1925 |
| Arg Leu Ser Arg Gly Ala Gln Ser Gly Pro Glu Gly Arg Glu Ala Glu | |
| 620 625 630 | |
| gag tcc aca ggc cca gag gaa gca gaa gcc ccc gag tcc ttt ccg gcg | 1973 |
| Glu Ser Thr Gly Pro Glu Glu Ala Glu Ala Pro Glu Ser Phe Pro Ala | |
| 635 640 645 | |
| gct gcc agt ccc ggg gat tca gcc act ggc cac cgg cgg ccc cca ctt | 2021 |
| Ala Ala Ser Pro Gly Asp Ser Ala Thr Gly His Arg Arg Pro Pro Leu | |
| 650 655 660 665 | |
| ggg ggc cgg aca gtg gct gag cac gtg gaa gcc att gag ggc agc gtc | 2069 |
| Gly Gly Arg Thr Val Ala Glu His Val Glu Ala Ile Glu Gly Ser Val | |
| 670 675 680 | |
| cag gag agc tcg ggc cct gtg acc acg atc tac atg ctg gca ggg aag | 2117 |
| Gln Glu Ser Ser Gly Pro Val Thr Thr Ile Tyr Met Leu Ala Gly Lys | |
| 685 690 695 | |
| ccc cgc gga tcc gaa ggc cct gtc cgc tct gtc ttc cgc cat ttt ggt | 2165 |
| Pro Arg Gly Ser Glu Gly Pro Val Arg Ser Val Phe Arg His Phe Gly | |
| 700 705 710 | |
| agc ttc cag aaa ggc cag gcg gaa gcc aag gtc aag agg gcc atc cct | 2213 |
| Ser Phe Gln Lys Gly Gln Ala Glu Ala Lys Val Lys Arg Ala Ile Pro | |
| 715 720 725 | |
| aag cct ccg cgc cag gcc ctg aat cgg aaa aag ggc agc cct ggc ctt | 2261 |
| Lys Pro Pro Arg Gln Ala Leu Asn Arg Lys Lys Gly Ser Pro Gly Leu | |
| 730 735 740 745 | |
| gcc tct ggc tct gtc ggc cag agc ccc aac tca gcc cca aaa gct ggg | 2309 |
| Ala Ser Gly Ser Val Gly Gln Ser Pro Asn Ser Ala Pro Lys Ala Gly | |
| 750 755 760 | |
| ctt cct ggg gcc aca ggg cct atg gca gtc aga cca gag gaa gcg gtc | 2357 |
| Leu Pro Gly Ala Thr Gly Pro Met Ala Val Arg Pro Glu Glu Ala Val | |
| 765 770 775 | |
| cgg ggg ctg ggg gct ggc acc gag agt tca agg aga gcc cag gag cca | 2405 |
| Arg Gly Leu Gly Ala Gly Thr Glu Ser Ser Arg Arg Ala Gln Glu Pro | |
| 780 785 790 | |
| gtc tct ggc tgt ggc tcc cca gaa cag gat ccc cag aag cag gct gaa | 2453 |
| Val Ser Gly Cys Gly Ser Pro Glu Gln Asp Pro Gln Lys Gln Ala Glu | |
| 795 800 805 | |
| gag gaa agg cag gag gaa cct gag tat gag aat gtt gta ccc atc tcc | 2501 |
| Glu Glu Arg Gln Glu Glu Pro Glu Tyr Glu Asn Val Val Pro Ile Ser | |
| 810 815 820 825 | |

agg cca cca gaa ccc tga tgaccttgaa tttggggagt ggggagagtg 2549
 Arg Pro Pro Glu Pro
 830

gatggactag actgtgctgt gtgctggaaa atgatcccgg ggccaggaca gacaaaccag 2609
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 aagggttgcc tgcagggact tttgctctgc tgtcctggac cctgtgtgcc tcataagggc 2789
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 acgcccttct cctgcctcag cctcccgagt agctgggact acaggtgccc tccaccacgc 3029
 ttggctaatt tttttgtata tttaatagag acagggtttc accatgttag ccaggatggt 3089
 ctcgatctcc tgacctcgtg atccacctgc ctgggcctcc caaagtgctg ggatgacagg 3149
 catgagccac caccgctggt ctatgaactt tttaaaaagg atgtatgtgt ataaaaacag 3209
 attcaaggga aaggcactaa atggtttttt cctctggaag atgagattgt aggtgatatt 3269
 tattttcttc tgaaactttt gtatagtttg caaatTTTct acagtgaaca ttctttttta 3329
 cttttgttac tagattgaat ttgataaagt ataataaaaa gcaatgatct ttgttaaaaa 3389
 aataaaaaagt actaacatta cag 3412

<210> 140
 <211> 830
 <212> PRT
 <213> Homo sapiens

<400> 140

Met Gly Leu Gly Leu Leu Leu Pro Leu Leu Leu Leu Trp Thr Arg Gly
 1 5 10 15

Thr Gln Gly Ser Glu Leu Asp Pro Lys Gly Gln His Val Cys Val Ala
 20 25 30

Ser Ser Pro Ser Ala Glu Leu Gln Cys Cys Ala Gly Trp Arg Gln Lys
 35 40 45

Asp Gln Glu Cys Thr Ile Pro Ile Cys Glu Gly Pro Asp Ala Cys Gln
 50 55 60

Lys Asp Glu Val Cys Val Lys Pro Gly Leu Cys Arg Cys Lys Pro Gly
 65 70 75 80

Phe Phe Gly Ala His Cys Ser Ser Arg Cys Pro Gly Gln Tyr Trp Gly
 85 90 95

Pro Asp Cys Arg Glu Ser Cys Pro Cys His Pro His Gly Gln Cys Glu
 100 105 110

Pro Ala Thr Gly Ala Cys Gln Cys Gln Ala Asp Arg Trp Gly Ala Arg
 115 120 125

Cys Glu Phe Pro Cys Ala Cys Gly Pro His Gly Arg Cys Asp Pro Ala
 130 135 140

Thr Gly Val Cys His Cys Glu Pro Gly Trp Trp Ser Ser Thr Cys Arg
 145 150 155 160

Arg Pro Cys Gln Cys Asn Thr Ala Ala Ala Arg Cys Glu Gln Ala Thr
 165 170 175

Gly Ala Cys Val Cys Lys Pro Gly Trp Trp Gly Arg Arg Cys Ser Phe
 180 185 190

Arg Cys Asn Cys His Gly Ser Pro Cys Glu Gln Asp Ser Gly Arg Cys
 195 200 205

Ala Cys Arg Pro Gly Trp Trp Gly Pro Glu Cys Gln Gln Gln Cys Glu
 210 215 220

Cys Val Arg Gly Arg Cys Ser Ala Ala Ser Gly Glu Cys Thr Cys Pro
 225 230 235 240

Pro Gly Phe Arg Gly Ala Arg Cys Glu Leu Pro Cys Pro Ala Gly Ser
 245 250 255

His Gly Val Gln Cys Ala His Ser Cys Gly Arg Cys Lys His Asn Glu
 260 265 270

Pro Cys Ser Pro Asp Thr Gly Ser Cys Glu Ser Cys Glu Pro Gly Trp
 275 280 285

Asn Gly Thr Gln Cys Gln Gln Pro Cys Leu Pro Gly Thr Phe Gly Glu
 290 295 300

Ser Cys Glu Gln Gln Cys Pro His Cys Arg His Gly Glu Ala Cys Glu
 305 310 315 320

Pro Asp Thr Gly His Cys Gln Arg Cys Asp Pro Gly Trp Leu Gly Pro
 325 330 335

Arg Cys Glu Asp Pro Cys Pro Thr Gly Thr Phe Gly Glu Asp Cys Gly
 340 345 350

Ser Thr Cys Pro Thr Cys Val Gln Gly Ser Cys Asp Thr Val Thr Gly
 355 360 365

Asp Cys Val Cys Ser Ala Gly Tyr Trp Gly Pro Ser Cys Asn Ala Ser
 370 375 380

Cys Pro Ala Gly Phe His Gly Asn Asn Cys Ser Val Pro Cys Glu Cys
 385 390 395 400

Pro Glu Gly Leu Cys His Pro Val Ser Gly Ser Cys Gln Pro Gly Ser
 405 410 415

Gly Ser Arg Asp Thr Ala Leu Ile Ala Gly Ser Leu Val Pro Leu Leu
 420 425 430

Leu Leu Phe Leu Gly Leu Ala Cys Cys Ala Cys Cys Cys Trp Ala Pro
 435 440 445

Arg Ser Asp Leu Lys Asp Arg Pro Ala Arg Asp Gly Ala Thr Val Ser
 450 455 460

Arg Met Lys Leu Gln Val Trp Gly Thr Leu Thr Ser Leu Gly Ser Thr
 465 470 475 480

Leu Pro Cys Arg Ser Leu Ser Ser His Lys Leu Pro Trp Val Thr Val
 485 490 495

[illegible]

●

1



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| | |
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| | |
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Glu Ala Lys Val Lys Arg Ala Ile Pro Lys Pro Pro Arg Gln Ala Leu
725 730 735

Asn Arg Lys Lys Gly Ser Pro Gly Leu Ala Ser Gly Ser Val Gly Gln
740 745 750

Ser Pro Asn Ser Ala Pro Lys Ala Gly Leu Pro Gly Ala Thr Gly Pro
755 760 765

Met Ala Val Arg Pro Glu Glu Ala Val Arg Gly Leu Gly Ala Gly Thr
770 775 780

Glu Ser Ser Arg Arg Ala Gln Glu Pro Val Ser Gly Cys Gly Ser Pro
785 790 795 800

Glu Gln Asp Pro Gln Lys Gln Ala Glu Glu Glu Arg Gln Glu Glu Pro
805 810 815

Glu Tyr Glu Asn Val Val Pro Ile Ser Arg Pro Pro Glu Pro
820 825 830

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<211> 3763
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (48)..(1139)
<223>

<400> 141
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Met Thr Phe
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gat gac aag atg aag cct gcg aat gac gag cct gat cag aag tca tgt 104
Asp Asp Lys Met Lys Pro Ala Asn Asp Glu Pro Asp Gln Lys Ser Cys
5 10 15

ggc aag aag cct aaa ggt ctg cat ttg ctt tcc tcc cca tgg tgg ttc 152
Gly Lys Lys Pro Lys Gly Leu His Leu Leu Ser Ser Pro Trp Trp Phe
20 25 30 35

cct gct gct atg act ctg gtc atc ctc tgc ctg gtg ttg tca gtg acc 200
Pro Ala Ala Met Thr Leu Val Ile Leu Cys Leu Val Leu Ser Val Thr
40 45 50

gtataggtat aggtataggt ataggtatag gtataggtag atagagatag aggtagaggt 2179
 agaggtagag gtagaggtag aggtagaggt agaggtagag atagagatag agatagagat 2239
 agagatagag atagagatag agatagagat agagatagag atagagatag agatagagat 2299
 agagatagag atagagatag agatagagat agatagtgtg tgtgtgctg tgtgtgtttc 2359
 tatgctaggt acgatccttg aggagatgag acagttttgt gtgaaatgag tttgtaataa 2419
 tccaaattta aaaataaatt cgatgattac ctgtagtggt catattacca cagccaagat 2479
 gatgaacata cctgtcactt ctgccccttc ccaaagcctc ctccctaaaa caaacaccaa 2539
 tctgctttca gttcgcattt tatagagctt ctcattttgt ttttaagaca gaatctcata 2599
 tagtcctggc tggcctggaa ctactacac agagcaggct ggcctccacc ttctagagct 2659
 cctcctgcca gactcccaaa ccttaagact gaaggagtgc cctgccgtgt gtgactcaaa 2719
 caccttaatg tgaatggaac agcataagat gtccaggttt tttcagtgca gcttcttcca 2779
 ctgggtacaa tttttaattt ttgtgttcat acatctccac cacagtgttt gtatcagttc 2839
 atcattcttt tcaaagtgtg agccttcccc tgtggatcta tagtgtcatt tgttatctgt 2899
 gtatttggtg atgccatttg ggttggtttt gtctggggtc acctacaaat aaagctgcta 2959
 tggatgtcca tggacaaggc taatatctta ggtaagcacc tacgagtaag atgcttgggt 3019
 cattcagtgt gggaatatat ggttggtat ttttaaccatt cctgtttgaa aacattaatt 3079
 ttttttattt ttgaaatcaa ttttttaaaa aattaattag tctattttac atctcaaccc 3139
 cagtttctct tctcctctc ctctcaacct tctccacct tctctcctg accccatcca 3199
 cccctcctcc ctttctctcc agaagagggg aggcctccca tggatgcaa ccagcctcag 3259
 catctcaagt tacagtaaga ataggtttgt cttctcctgt gaaaatctta atttttagat 3319
 ttatctatta tatatgcagt actttgcttg cacatatgta ttggtacct gtacatgcat 3379
 ggtaccagag aaagtcagaa gaggccattg tattttctgg gactggaatt acagacgttt 3439
 ttgaacaatc ctatagactc tgggaactga acccaggctg tctggaaagg caagcagtgc 3499
 tcttaacccc tgagccattt cttctggcct tttagcaatt tttattaata tataactgtg 3559
 tatacttgca cttttagctc gaagttctta agtgtcaa atgtcttgat ttattttcat 3619
 gttatcactg tctgtacaat ttctgtgatg aaataactga gcatatattt tgagaatttg 3679
 gttttcttaa attttaaatc tgaaggattt acatatttga gaataaaaac cagccagata 3739
 cataaaaaaa aaaaaaaaaa aaaa 3763

Leu Lys Gly Lys Ile Asp Thr Leu Thr Leu Lys Leu Asn Glu Lys Ser
 195 200 205

Lys Glu Gln Glu Glu Leu Leu Gln Lys Asn Gln Asn Leu Gln Glu Ala
 210 215 220

Leu Gln Arg Ala Ala Asn Phe Ser Gly Pro Cys Pro Gln Asp Trp Leu
 225 230 235 240

Trp His Lys Glu Asn Cys Tyr Leu Phe His Gly Pro Phe Ser Trp Glu
 245 250 255

Lys Asn Arg Gln Thr Cys Gln Ser Leu Gly Gly Gln Leu Leu Gln Ile
 260 265 270

Asn Gly Ala Asp Asp Leu Thr Phe Ile Leu Gln Ala Ile Ser His Thr
 275 280 285

Thr Ser Pro Phe Trp Ile Gly Leu His Arg Lys Lys Pro Gly Gln Pro
 290 295 300

Trp Leu Trp Glu Asn Gly Thr Pro Leu Asn Phe Gln Phe Phe Lys Thr
 305 310 315 320

Arg Gly Val Ser Leu Gln Leu Tyr Ser Ser Gly Asn Cys Ala Tyr Leu
 325 330 335

Gln Asp Gly Ala Val Phe Ala Glu Asn Cys Ile Leu Ile Ala Phe Ser
 340 345 350

Ile Cys Gln Lys Lys Thr Asn His Leu Gln Ile
 355 360

<210> 143
 <211> 1102
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (44)..(1102)
 <223>

[illegible]

397

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Val Val Phe Gln Phe Gln His Ile Met Val Gly Leu Ile Leu Pro Gly
200 205 210

att gtc atc ctg tcc tgc tat tgc att atc atc tcc aag ctg tca cac 727
Ile Val Ile Leu Ser Cys Tyr Cys Ile Ile Ile Ser Lys Leu Ser His
215 220 225

tcc aag ggc cac cag aag cgc aag gcc ctc aag acc aca atc atc ccc 775
Ser Lys Gly His Gln Lys Arg Lys Ala Leu Lys Thr Thr Ile Ile Pro
230 235 240

atc ctg gct ttc ttc gcc tgt tgg ctg cct tac tac att ggg atc agc 823
Ile Leu Ala Phe Phe Ala Cys Trp Leu Pro Tyr Tyr Ile Gly Ile Ser
245 250 255 260

atc gac tcc ttc atc ctc ctg gaa atc atc aag caa ggg tgt gag ttt 871
Ile Asp Ser Phe Ile Leu Leu Glu Ile Ile Lys Gln Gly Cys Glu Phe
265 270 275

gag aac act gtg cac aag tgg att tcc atc acc gag gcc cta gct ttc 919
Glu Asn Thr Val His Lys Trp Ile Ser Ile Thr Glu Ala Leu Ala Phe
280 285 290

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ttc | cac | tgt | tgt | ctg | aac | ccc | atc | ctc | tat | gct | ttc | ctt | gga | gcc | aaa | 967 |
| Phe | His | Cys | Cys | Leu | Asn | Pro | Ile | Leu | Tyr | Ala | Phe | Leu | Gly | Ala | Lys | |
| | | 295 | | | | | 300 | | | | | 305 | | | | |

ttt aaa acc tct gcc cag cac gca ctc acc tct gtg agc aga ggg tcc 1015
Phe Lys Thr Ser Ala Gln His Ala Leu Thr Ser Val Ser Arg Gly Ser
310 315 320

agc ctc aag atc ctc tcc aaa gga aag cga ggt gga cat tca tct gtt 1063
 Ser Leu Lys Ile Leu Ser Lys Gly Lys Arg Gly Gly His Ser Ser Val
 325 330 335 340

tcc act gag tct gag tct tca agt ttt cac tcc agc taa 1102
Ser Thr Glu Ser Glu Ser Ser Ser Phe His Ser Ser
345 350

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<210> 144
<211> 352
<212> PRT
<213> Homo sapiens
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<400> 144

Met Glu Gly Ile Ser Ile Tyr Thr Ser Asp Asn Tyr Thr Glu Glu Met
1 5 10 15

Gly Ser Gly Asp Tyr Asp Ser Met Lys Glu Pro Cys Phe Arg Glu Glu
20 25 30

Asn Ala Asn Phe Asn Lys Ile Phe Leu Pro Thr Ile Tyr Ser Ile Ile
35 40 45

Phe Leu Thr Gly Ile Val Gly Asn Gly Leu Val Ile Leu Val Met Gly
50 55 60

Tyr Gln Lys Lys Leu Arg Ser Met Thr Asp Lys Tyr Arg Leu His Leu
65 70 75 80

Ser Val Ala Asp Leu Leu Phe Val Ile Thr Leu Pro Phe Trp Ala Val
85 90 95

Asp Ala Val Ala Asn Trp Tyr Phe Gly Asn Phe Leu Cys Lys Ala Val
100 105 110

His Val Ile Tyr Thr Val Asn Leu Tyr Ser Ser Val Leu Ile Leu Ala
115 120 125

Phe Ile Ser Leu Asp Arg Tyr Leu Ala Ile Val His Ala Thr Asn Ser
130 135 140

Gln Arg Pro Arg Lys Leu Leu Ala Glu Lys Val Val Tyr Val Gly Val
145 150 155 160

Trp Ile Pro Ala Leu Leu Leu Thr Ile Pro Asp Phe Ile Phe Ala Asn
165 170 175

Val Ser Glu Ala Asp Asp Arg Tyr Ile Cys Asp Arg Phe Tyr Pro Asn
180 185 190

Asp Leu Trp Val Val Val Phe Gln Phe Gln His Ile Met Val Gly Leu
195 200 205

Ile Leu Pro Gly Ile Val Ile Leu Ser Cys Tyr Cys Ile Ile Ile Ser
210 215 220

Lys Leu Ser His Ser Lys Gly His Gln Lys Arg Lys Ala Leu Lys Thr
225 230 235 240

Thr Ile Ile Pro Ile Leu Ala Phe Phe Ala Cys Trp Leu Pro Tyr Tyr
245 250 255

Ile Gly Ile Ser Ile Asp Ser Phe Ile Leu Leu Glu Ile Ile Lys Gln
260 265 270

Gly Cys Glu Phe Glu Asn Thr Val His Lys Trp Ile Ser Ile Thr Glu
275 280 285

Ala Leu Ala Phe Phe His Cys Cys Leu Asn Pro Ile Leu Tyr Ala Phe
290 295 300

Leu Gly Ala Lys Phe Lys Thr Ser Ala Gln His Ala Leu Thr Ser Val
305 310 315 320

Ser Arg Gly Ser Ser Leu Lys Ile Leu Ser Lys Gly Lys Arg Gly Gly
325 330 335

His Ser Ser Val Ser Thr Glu Ser Glu Ser Ser Ser Phe His Ser Ser
340 345 350

<210> 145
<211> 31
<212> DNA
<213> Unknown

<220>
<223> Primer

<400> 145
ctccaagctt tgvccagcga gaaaagcgaa g

31

<210> 146
<211> 45
<212> DNA
<213> Unknown

<220>
<223> Primer

<400> 146
gcctcctgca gatccaccgc ctccggatgt atataaatat atatc

45

<210> 147
<211> 30
<212> DNA
<213> Unknown

<220>
<223> Primer

<400> 147
gcctcctgca gatgtatata aatatatc

30

<210> 148
<211> 13
<212> PRT
<213> Homo sapiens

<400> 148

Ser Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn Asn
1 5 10

<210> 149
<211> 66
<212> PRT
<213> Homo sapiens

<400> 149

Met Asn Ala Ala Ala Ser Gly Pro Ser Asn Thr Pro Pro Glu Ile Ala
1 5 10 15

Ala Ala Arg Ala His Tyr Asn Ile Val Thr Phe Ala Ala Ala Ile Tyr
20 25 30

Lys Lys Ser Gln His Met Ala Ala Ala Val Asn Ile Arg Asn Cys Cys
35 40 45

Tyr Ile Ala Ala Ala Ser Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu
50 55 60

Asn Asn
65

<210> 150
<211> 27
<212> DNA
<213> Unknown

<220>
<223> Primer

<400> 150
agcttggtg ttccgccatg gctcgag

27

<210> 151
<211> 36
<212> DNA
<213> Unknown

<220>
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<400> 151
ccgaattcaa gcttagatgc tctagcaaaa gccaaag

36

<210> 152
<211> 39
<212> DNA
<213> Unknown

<220>
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<400> 152
cccctgcagt taggatccct cgagaggtaa aatttcac

39

<210> 153
<211> 30
<212> DNA
<213> Unknown

<220>
<223> Primer

<400> 153
ccgaattctc gaggctccta aagaaaatac

30

<210> 154
<211> 41
<212> DNA
<213> Unknown

<220>
<223> Primer

<400> 154
ccaagcttgg atcctgcgca gatcttggtg ttggtttttt g

41

<210> 155
<211> 21
<212> DNA
<213> Unknown

<220>
<223> Primer

<210> 160
<211> 24
<212> DNA
<213> Unknown

<220>
<223> Primer

<400> 160
ggtctagaac cctcaaacaa gccc

24

<210> 161
<211> 36
<212> DNA
<213> Unknown

<220>
<223> Primer

<400> 161
acatgcatgc actagtgcgc gcgttgacat tgatta

36

<210> 162
<211> 36
<212> DNA
<213> Unknown

<220>
<223> Primer

<400> 162
acatgcatcc atgtgagagc tctgcttata tagacc

36

<210> 163
<211> 4
<212> PRT
<213> Unknown

<220>
<223> Consensus sequence

<400> 163

Cys Val Ile Ala
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<210> 164
<211> 6
<212> PRT
<213> Unknown

<220>
<223> Conserved domain

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa can be any amino acid

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa can be any amino acid

<400> 164

Leu Pro Xaa Thr Gly Xaa
1 5

<210> 165
<211> 6
<212> PRT
<213> Homo sapiens

<400> 165

Val Thr Tyr Ala Gln Leu
1 5

<210> 166
<211> 6
<212> PRT
<213> Homo sapiens

<400> 166

Ile Val Tyr Glu Leu Leu
1 5